Initial Contact: Coordinator Development Services – David
Telephone: 07 4189 9100
Our Reference: MCU23/0034

South Burnett Regional Council
ABN 89 972 463 351
PO Box 336
Kingaroy QLD 4610
1300 789 279 or (07) 4189 9100
(07) 4162 4806
info@southburnett.qld.gov.au
www.southburnett.qld.gov.au

10 April 2025

IMEMS Pty Ltd
C/- ONF Surveyors
PO Box 896
KINGAROY QLD 4610

Dear Sir/Madam

# Negotiated Decision Notice

***Planning Act 2016***

I refer to your application and the representations you made in respect to the decision notice. On 3 April 2025, Council decided your representations.

Details of the decision are as follows:

## APPLICATION DETAILS

| | |
|---|---|
| Application No: | MCU23/0034 |
| Street Address: | 157 Boonenne Road GOODGER QLD 4610 |
| Real Property Description: | Lot 4 on RP807137 |
| Planning Scheme: | South Burnett Regional Council Planning Scheme |

## DECISION DETAILS

Council, on 18 December 2024, decided to issue the following type of approval:

Development Permit for Material Change of Use – High Impact Industry (Sawmill) and Concurrent Environmentally Relevant Activity (ERA) 47(b) Timber Milling and Woodchipping.

In relation to representations, Council decided to:

A. Agree to change condition MCU17.

## CURRENCY PERIOD OF APPROVAL

The currency period for this development approval is six (6) years starting the day that this development approval takes effect. (Refer to Section 85 “Lapsing of approval at end of currency period” of the *Planning Act 2016*.)

## INFRASTRUCTURE

Where conditions relate to the provision of infrastructure, these are non-trunk infrastructure conditions unless specifically nominated as a “***necessary infrastructure condition***” for the provision of trunk infrastructure as defined under Chapter 4 of the *Planning Act 2016*.

## ASSESSMENT MANAGER CONDITIONS

GEN1. The development must be completed and maintained generally in accordance with the approved plans and documents and any amendments arising through conditions to this development approval:

| Drawing Title | Prepared By | Drawing No. | Rev/Date |
|---|---|---|---|
| Site Plan | ONF Surveyors | 11574 Site | 05/12/2023 |
| Site Plan | ONF Surveyors | 11574 Site | 05/12/2023 |

| Document Title | Prepared By | Date | Ref. No. | Rev. |
|---|---|---|---|---|
| Supporting Document - Development Application, Material Change of Use, Application for an Environmental Authority ERA 47(b) Sawmilling and Woodchipping | IMEMS Pty Ltd | 28/02/25 | 'Version' 28 February 2025 | 1 |
| Noise Impact Assessment | ATP Consulting Engineers | August 23 | ATP23042 1-R-NIA-01 | 1 |

**DEVELOPMENT PERIOD - MCU**

GEN2. The currency period for this development approval for Material Change of Use for High Impact Industry (Sawmill) is six (6) years after the development approval starts to have effect.

GEN3. The development (including landscaping, parking, driveways and other external spaces) shall be maintained in accordance with the approved plans, subject to and modified by any conditions of this approval.

**PARTICULAR USE**

MCU1. This Development Permit is for the particular use(s) stated as shown on the Approved Plans and does not imply or comprise an approval for any other use(s).

**SITE OPERATIONS**

MCU2. The carrying out of the operations of the High Impact Industry (Sawmill) on site is to be in accordance with the "Supporting Document - Development Application, Material Change of Use, Application for an Environmental Authority ERA 47(b) Sawmilling and Woodchipping", prepared by IMEMS Pty Ltd, dated 20/12/23 as referenced at Condition GEN1.

Timing – At all times.

**REFUSE COLLECTION**

MCU3. Provision must be made for the storage and removal of refuse in accordance with the *Waste Reduction and Recycling Regulation 2011*.

MCU4. Any areas that are dedicated for the collection and/or storage of solid waste on the premises are to be:

(a) level;
(b) provided with impervious hard stand and drained; and
(c) if facing either the street frontage or adjoining properties, screened by a 1.8m high fence around the full perimeter.

MCU5. Refuse bin areas are to be provided for the washing out of the refuse bins and in connection with this:
(a) all tap outlets must be fitted with backflow prevention devices;
(b) the floor areas are to be drained to sewer; and
(c) areas are to be covered, and drainage designed such that water not associated with the washing out process (e.g. rainfall) does not enter the sewer.

**WOOD SHAVINGS OFFCUTS AND SAWDUST DISPOSAL**

MCU6. The disposal of wood shavings and wood offcuts is to be carried out in a manner that does not cause material or serious harm to soil or water / air quality and accordance with part 8.1 of the IMEMS Pty Ltd document, referenced at Condition GEN1.

**REGULATED WASTE**

MCU7. All regulated waste is to be appropriately stored in accordance with recommendations in part 8 of the IMEMS Pty Ltd document, referenced at Condition GEN1.

**STORAGE OF HAZARDOUS CHEMICALS**

MCU8. Submit for Council's records evidence that hazardous materials used in association with the approved High Impact Industry are stored in suitable locations as certified by an appropriately qualified professional.

Timing - Prior to the commencement of High Impact Industry use.

MCU9. Implement and maintain management actions for the storage of hazardous material in a manner that does not cause environmental harm and at the direction/recommendations of the suitably qualified professional.

Timing - Prior to the commencement of High Impact Industry use.

**FUEL STORAGE AND REFUELLING**

MCU10. The storage of fuel on site must not exceed that cited in part 8 of the IMEMS Pty Ltd document, referenced at Condition GEN1.

**STORAGE OF LIQUID CHEMICALS (OTHER THAN FUEL**

MCU11. All liquid chemicals (including flammable liquids (other than fuel), chemicals, waste oil, acid and lube oil) must be stored within dedicated impervious secondary containment stores, structures or devices and in a manner that complies with Australian Standards AS1940 - The storage and handling of flammable and combustible liquids.

**ACOUSTICS**

MCU12. The approved High Impact Industry is to incorporate all recommendations contained in the approved Noise Impact Assessment Report by ATP Consulting Engineers, annexed to the approved IMEMS Pty Ltd document and referenced at Condition GEN 1.

Timing – At all times.

**LIGHTING**

MCU13. All outdoor lighting must be designed, installed, operated and maintained to comply with the requirements of AS4282 – *Control of the obtrusive effects of outdoor lighting*.

**DUST EMISSIONS**

MCU14. The applicant must conduct and operate the project in a manner that minimises dust generation from the site, including wind-blown and traffic-generated dust as far as practicable. The applicant must identity and implement all practicable dust mitigation measures, including cessation of relevant works, as appropriate, such that emissions of visible dust are minimised in all weather conditions.

**AIR QUALITY**

MCU15. There is to be no burning of timber, timber by-products or other wastes occurs on the site where directly associated with the approved High Impact Industry.

Note: the burning of timber associated with the existing residential use is not subject to condition MCU15.

**SITE MANAGEMENT**

MCU16. Ensure that all contractors engaged to remove from or import materials to the site maintains all Council roads clean and free of any debris from transporting of wood products and waste products.

**HOURS OF OPERATION MCU**

*MCU17.* Hours of operation for the High Impact Industry are to be in strictly in accordance with the following:

- Monday to ~~Friday~~ **Saturday** – 6.00 am to ~~5:00pm~~ **6.00 pm**
- **Chainsaw operations must not occur before 7am and after 6pm Mondays to Saturdays**
- **Deliveries and removals by heavy vehicles are limited between 7am and 6pm Mondays to Saturdays**
- ~~Saturday (and public holidays*) - 7.00 am to 12.00 pm (noon)~~
- **Public Holidays – 6.00 am to 3.00 pm (No chainsaws before 7am)**
- **Sundays – Maintenance works only (as required)**

**ENVIRONMENTALLY RELEVANT ACTIVITY**

MCU18. The following Environmental Authority: Reference No. P-EA-100585794 dated 31/July 2024) takes effect on the date that the related approval (MCU23/0034) takes effect. Within 20 business days of the Environmental Authority taking effect, the administering authority must be given written notice of the occurrence. Prior to the commencement of the activity, the administering authority must be given written notice of the proposed date of commencement.

**ENGINEERING WORKS**

ENG1. Complete all works approved and works required by conditions of this development approval and/or any related approvals at no cost to Council, prior to commencement of the use unless stated otherwise.

ENG2. Undertake Engineering designs and construction in accordance with the Planning Scheme, Council's standards, relevant design guides, and Australian Standards.

ENG3. Be responsible for the full cost of any alterations necessary to electricity, telephone, water mains, sewer mains, stormwater drainage systems or easements and/or other public utility installations resulting from the development or from road and drainage works required in connection with the development.

**LOCATION, PROTECTION AND REPAIR OF DAMAGE TO COUNCIL AND PUBLIC UTILITY SERVICES INFRASTRUCTURE AND ASSETS**

ENG4. Be responsible for the location and protection of any Council and public utility services infrastructure and assets that may be impacted on during construction of the development.

ENG5. Repair all damages incurred to Council and public utility services infrastructure and assets, as a result of the proposed development immediately should hazards exist for public health and safety or vehicular safety. Otherwise, repair all damages immediately upon completion of works associated with the development.

**STORMWATER MANAGEMENT**

ENG6. Provide overland flow paths that do not adversely alter the characteristics of existing overland flows on other properties or that create an increase in flood damage on other properties.

ENG7. Ensure that adjoining properties and roadways are protected from ponding or nuisance from stormwater as a result of any site works undertaken as part of the proposed development.

**WATER SUPPLY**

ENG8. Provide an adequate potable water supply for the staff and visitors to the site.

**ON-SITE WASTEWATER DISPOSAL**

ENG9. Connect the development to an on-site wastewater disposal system, in accordance with the AS1547:2012 *On-site domestic wastewater management* and the Queensland Plumbing and Wastewater Code - 2019.

ENG10. Obtain a Development Permit for Plumbing Works for the on-site sewerage treatment system.

**PARKING – GENERAL**

ENG11. Provide adequate car parking spaces to accommodate all staff and visitors.

ENG12. Ensure access to car parking spaces, vehicle loading and manoeuvring areas and driveways remain unobstructed and available for their intended purpose during the hours of operation.

**VEHICLE ACCESS – TURNOUT**

ENG13. Design and construct vehicle turnout for the house generally in accordance with Council's Standard Drawing No. 00049 Rev B.

ENG14. Design and construct vehicle turnout for the sawmill site generally in accordance with Council's Standard Drawing No. 00049 Rev B, and sized to accommodate the manoeuvring of a B-Double vehicle.

**ELECTRICITY AND TELECOMMUNICATION**

ENG15. Connect the development to electricity and telecommunication services.

**EROSION AND SEDIMENT CONTROL – GENERAL**

ENG16. Undertake an Erosion and Sediment Control Program including, but not limited to the following:

a) Construction of sediment fences, earth berms, temporary drainage, temporary sediment basins and stormwater filtering devices designed to suitably manage sediment or sediment laden water from being transported to adjoining properties, roads and/or stormwater drainage systems;
b) Identification of areas to be utilised on the site for stockpiling of materials capable of being moved by the action of wind or running water; the materials shall be stored clear of drainage paths, and appropriate measures implemented to prevent the entry of such materials into either the road or drainage system;
c) Inspection regime of sediment and erosion controls; and
d) Response times to events where controls have been damaged or are inadequate, and erosion or the release of sediment or sediment laden stormwater has occurred from the site or associated works.

ENG17. Implement the approved Erosion and Sediment Control Plan and modify as necessary, to maintain compliance with the approval.

ENG18. Undertake works to reinstate or clean up the road and/or drainage system damaged/blocked as a result of erosion and/or sedimentation from the site, at no cost to Council. Undertake such works immediately where there is a potential hazard to pedestrians and/or passing traffic.

## REFERRAL AGENCIES

The referral agencies applicable to this application are:

| Referral Status | Referral Agency and Address | Referral Trigger | Response |
|---|---|---|---|
| Concurrence | State Assessment & Referral Agency<br>PO Box 979<br>BUNDABERG QLD 4670 | "Schedule 10, Part 5, Division 4, Table 2, Column 2 – Environmentally relevant activity | The agency provided its response on 30 September 2024 (Reference No. 2401-38585 SRA). A copy of the response is attached. |

A copy of any referral agency conditions is attached.

## APPROVED PLANS

The following plans are Approved plans for the development:

**Approved Plans**

| Plan No. | Rev. | Plan Name | Date |
|---|---|---|---|
| 11574 Site | - | *Site Plan*, prepared by ONF Surveyors | 05/12/2023 |
| 11574 Ste | - | *Sit Plan*, prepared by ONF Surveyors | 05/12/2023 |

## REFERENCED DOCUMENTS

The following documents are referenced in the assessment manager conditions:

**Referenced Documents**

| Document No. | Rev. | Document Name | Date |
|---|---|---|---|
| 'Version' 28 February 2025 | 1 | *Supporting Document – Development Application, Material Change of Use, Application for an Environmental Authority ERA 47(b) Sawmilling & Woodchipping*, prepared by IMEMS Pty Ltd | 28/02/2025 |
| ATP230421-R-NIA-01 | 1 | *Noise Impact Assessment*, prepared by ATP Consulting Engineers | August 23 |

## ADVISORY NOTES

The following notes are included for guidance and information purposes only and do not form part of the assessment manager conditions:

**ADVICE**
**HERITAGE**

ADV1. This development approval does not authorise any activity that may harm Aboriginal Cultural Heritage. Under the Aboriginal Cultural Heritage Act 2003 you have a duty of care in relation to such heritage. Section 23(1) provides that "A person who carries out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal Cultural Heritage." Council does not warrant that the approved development avoids affecting Aboriginal Cultural Heritage. It may therefore be prudent for you to carry out searches, consultation, or a Cultural Heritage assessment to ascertain the presence of Aboriginal Cultural Heritage. The Act and the associated duty of care guidelines explain your obligations in more detail and should be consulted before proceeding. A search can be arranged by visiting https://www.datsip.qld.gov.au and filling out the Aboriginal and Torres Strait Islander Cultural Heritage Search Request Form.

**APPEAL RIGHTS**

ADV2. Attached for your information is a copy of Chapter 6 of the Planning Act 2016 in regard to Appeal Rights.

ADV3. Infrastructure charges are now levied by way of an Infrastructure Charges Notice, issued pursuant to section 119 of the *Planning Act 2016*.

ADV4. Construction Noise and Dust Emissions Pursuant to the *Environmental Protection Act 1994*, all development involving the emission of noise and dust from building and/or construction activities, must ensure that the emissions are in accordance with the requirements of the Act.

**TRANSPORT ROUTE/ROADWORKS**

ADV5. Any and all road upgrade requirements for Boonenne Road have been conditioned as part of the B-Double Permit assessment and approval.

## VARIATION APPROVAL

Not Applicable.

## FURTHER DEVELOPMENT PERMITS REQUIRED

- Development Permit for Building Work
- Development Permit for Plumbing & Drainage Work

## SUBMISSIONS

There were two (2) properly made submissions about the application. In accordance with the *Planning Act 2016*, the name, residential or business address, and electronic address of the principal submitter for each properly made submission is provided and attached.

## RIGHTS OF APPEAL

You are entitled to appeal against this decision. A copy of the relevant appeal provisions from the *Planning Act 2016* is attached.

## OTHER DETAILS

If you wish to obtain more information about Council's decision, electronic copies are available on line at www.southburnett.qld.gov.au, or at Council Offices.

Yours faithfully

David Hursthouse
**COORDINATOR DEVELOPMENT SERVICES**

Enc: Adopted Infrastructure Charge Notice
Referral Agency Response
Approved Plans/Documents
List of Submitters
Appeal Rights

cc SARA

# List of Submitters

*PLANNING ACT 2016 & THE PLANNING REGULATION 2017*

*Only Properly Made Submissions are to be included in this notice*

*R & T Davison*
*186 Boonenne Road*
*KINGAROY QLD 4610*

*Email: rtdavison2@gmail.com*

*J & D Freeman*
*C/- Revolution Town Planning*
*1 Ball Street*
*DRAYTON QLD 4350*

*Email: peter@revolutiontp.com.au*

**Chapter 6 Dispute resolution**

**Part 1 Appeal rights**

**229 Appeals to tribunal or P&E Court**

(1) Schedule 1 of the *Planning Act 2016* states –
  (a) Matters that may be appealed to –
    (i) either a tribunal or the P&E Court; or
    (ii) only a tribunal; or
    (iii) only the P&E Court; and
  (b) The person-
    (i) who may appeal a matter (**the *appellant***); and
    (ii) who is a respondent in an appeal of the matter; and
    (iii) who is a co-respondent in an appeal of the matter; and
    (iv) who may elect to be a co-respondent in an appeal of the matter.

(Refer to Schedule 1 of the Planning Act 2016)

(2) An appellant may start an appeal within the appeal period.
(3) The ***appeal period*** is –
  (a) for an appeal by a building advisory agency – 10 business days after a decision notice for the decision is given to the agency; or
  (b) for an appeal against a deemed refusal – at any time after the deemed refusal happens; or
  (c) for an appeal against a decision of the Minister, under chapter 7, part 4, to register premises or to renew the registration of premises – 20 business days after a notice us published under section 269(3)(a) or (4); or
  (d) for an appeal against an infrastructure charges notice – 20 business days after the infrastructure charges notice is given to the person; or
  (e) for an appeal about a deemed approval of a development application for which a decision notice has not been given – 30 business days after the applicant gives the deemed approval notice to the assessment manager; or
  (f) for any other appeal – 20 business days after a notice of the decision for the matter, including an enforcement notice, is given to the person.

*Note –*
*See the P&E Court Act for the court's power to extend the appeal period.*

(4) Each respondent and co-respondent for an appeal may be heard in the appeal.
(5) If an appeal is only about a referral agency's response, the assessment manager may apply to the tribunal or P&E Court to withdraw from the appeal.
(6) To remove any doubt. It is declared that an appeal against an infrastructure charges notice must not be about-
  (a) the adopted charge itself; or
  (b) for a decision about an offset or refund-
    (i) the establishment cost of trunk infrastructure identified in a LGIP; or
    (ii) the cost of infrastructure decided using the method included in the local government's charges resolution.

**230 Notice of appeal**

(1) An appellant starts an appeal by lodging, with the registrar of the tribunal or P&E Court, a notice of appeal that-
  (a) is in the approved form; and
  (b) succinctly states the grounds of the appeal.
(2) The notice of appeal must be accompanied by the required fee.
(3) The appellant or, for an appeal to a tribunal, the registrar must, within the service period, give a copy of the notice of appeal to –
  (a) the respondent for the appeal ; and
  (b) each co-respondent for the appeal; and
  (c) for an appeal about a development application under schedule 1, table 1, item 1 – each principal submitter for the development application; and
  (d) for and appeal about a change application under schedule 1, table 1, item 2 – each principal submitter for the change application; and
  (e) each person who may elect to become a co-respondent for the appeal, other than an eligible submitter who is not a principal submitter in an appeal under paragraph (c) or (d); and
  (f) for an appeal to the P&E Court – the chief executive; and
  (g) for an appeal to a tribunal under another Act – any other person who the registrar considers appropriate.
(4) The *service period* is –
  (a) if a submitter or advice agency started the appeal in the P&E Court – 2 business days after the appeal has started; or
  (b) otherwise – 10 business days after the appeal is started.
(5) A notice of appeal given to a person who may elect to be a co-respondent must state the effect of subsection (6).
(6) A person elects to be a co-respondent by filing a notice of election, in the approved form, within 10 business days after the notice of appeal is given to the person.

231 Other appeals

(1) Subject to this chapter, schedule 1 and the P&E Court Act, unless the Supreme Court decides a decision or other matter under this Act is affected by jurisdictional error, the decision or matter is non-appealable.
(2) The *Judicial Review Act 1991*, part 5 applies to the decision or matter to the extent it is affected by jurisdictional error.
(3) A person who, but for subsection (1) could have made an application under the Judicial Review Act 1991 in relation to the decision or matter, may apply under part 4 of that Act for a statement of reasons in relation to the decision or matter.
(4) In this section –
*decision* includes-
  (a) conduct engaged in for the purpose of making a decision; and
  (b) other conduct that relates to the making of a decision; and
  (c) the making of a decision or failure to make a decision; and
  (d) a purported decision ; and
  (e) a deemed refusal.
*non-appealable,* for a decision or matter, means the decision or matter-
  (a) is final and conclusive; and
  (b) may not be challenged, appealed against, reviewed, quashed, set aside or called into question in any other way under the Judicial Review Act 1991 or otherwise, whether by the Supreme Court, another court, a tribunal or another entity; and
  (c) is not subject to any declaratory, injunctive or other order of the Supreme Court, another court, a tribunal or another entity on any ground.

232 Rules of the P&E Court

(1) A person who is appealing to the P&E Court must comply with the rules of the court that apply to the appeal.

However, the P&E Court may hear and decide an appeal even if the person has not complied with the rules of the P&E Court.

# INFRASTRUCTURE CHARGES NOTICE

*(Section 119 of the Planning Act 2016)*

| | |
|---|---|
| **APPLICANT:** | IMEMS Pty Ltd<br>C/- ONF Surveyors<br>PO Box 896<br>KINGAROY QLD 4610 |
| **APPLICATION:** | High impact industry (Sawmill) and concurrent ERA 47 – Timber Milling and Wood chipping |
| **DATE:** | 12/12/2024 |
| **FILE REFERENCE:** | MCU23/0034 |

**AMOUNT OF THE LEVIED CHARGE:** *(Details of how these charges were calculated are shown overleaf)*

| | |
|---|---|
| **$0.00** | **Total** |
| $0.00 | Water Supply Network |
| $0.00 | Sewerage Network |
| $0.00 | Transport Network |
| $0.00 | Parks and Land for Community Facilities Network |
| $0.00 | Stormwater Network |

| | |
|---|---|
| **AUTOMATIC INCREASE OF LEVIED CHARGE:** | The amount of the levied charge is subject to an automatic increase. Refer to the Information Notice attached to this notice for more information on how the increase is worked out. |
| **LAND TO WHICH CHARGE APPLIES:** | Lot 4 on RP807137 |
| **SITE ADDRESS**: | 157 Boonenne Road GOODGER |
| **PAYABLE TO:** | **South Burnett Regional Council** |
| **WHEN PAYABLE:** *(In accordance with the timing stated in Section 122 of the Planning Act 2016)* | Material Change of Use – When the change happens. |
| **OFFSET OR REFUND:** | Not Applicable. |

This charge is made in accordance with South Burnett Regional Council's ***Charges Resolution (No. 3) 2019***

# DETAILS OF CALCULATION

## Water Supply

### Adopted Charges

| Development Description | Number of Units | Units of Measure | Charge Rate | Reference | Amount |
|---|---|---|---|---|---|
| High Impact Industry (Sawmill) & Concurrent ERA 47 | 0 | GFA | $0.00 | CR Table 2.2 | $0.00 |

### Discounts*

| Description | Number of Units | Units of Measure | Discount Rate | Reference | Amount |
|---|---|---|---|---|---|
| Not Applicable | - | GFA | $0.00 | CR Table 2.2 | $0.00 |

## Sewerage

### Adopted Charges

| Development Description | Number of Units | Units of Measure | Charge Rate | Reference | Amount |
|---|---|---|---|---|---|
| High Impact Industry (Sawmill) & Concurrent ERA 47 | 0 | GFA | $0.00 | CR Table 2.2 | $0.00 |

### Discounts*

| Description | Number of Units | Units of Measure | Discount Rate | Reference | Amount |
|---|---|---|---|---|---|
| Not Applicable | - | GFA | $0.00 | CR Table 2.2 | $0.00 |

## Transport

### Adopted Charges

| Development Description | Number of Units | Units of Measure | Charge Rate | Reference | Amount |
|---|---|---|---|---|---|
| High Impact Industry (Sawmill) & Concurrent ERA 47 | 0 | GFA | $0.00 | CR Table 2.2 | $0.00 |

### Discounts*

| Description | Number of Units | Units of Measure | Discount Rate | Reference | Amount |
|---|---|---|---|---|---|
| Not Applicable | - | GFA | $0.00 | CR Table 2.2 | $0.00 |

## Parks and Land for Community Facilities

### Adopted Charges

| Development Description | Number of Units | Units of Measure | Charge Rate | Reference | Amount |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| High Impact Industry (Sawmill) & Concurrent ERA 47 | 0 | GFA | $0.00 | CR Table 2.2 | $0.00 |

**Discounts***

| Description | Number of Units | Units of Measure | Discount Rate | Reference | Amount |
|---|---|---|---|---|---|
| Not Applicable | - | GFA | $0.00 | CR Table 2.2 | $0.00 |

## Stormwater

**Adopted Charges**

| Development Description | Number of Units | Units of Measure | Charge Rate | Reference | Amount |
|---|---|---|---|---|---|
| High Impact Industry (Sawmill) & Concurrent ERA 47 | 0 | GFA | $0.00 | CR Table 2.2 | $0.00 |

**Discounts***

| Description | Number of Units | Units of Measure | Discount Rate | Reference | Amount |
|---|---|---|---|---|---|
| Not Applicable | - | GFA | $0.00 | CR Table 2.2 | $0.00 |

## Levied Charges

| Development Description | Water Supply | Sewerage | Transport | Parks & Land for Community Facilities | Stormwater | Total |
|---|---|---|---|---|---|---|
| High Impact Industry (Sawmill) & Concurrent ERA 47 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 | $0.00 |
| **Total** | **$0.00** | **$0.00** | **$0.00** | **$0.00** | **$0.00** | **$0.00** |

** In accordance with Section 3.3 of the Charges Resolution, the discount may not exceed the adopted charge. Any surplus discounts will not be refunded, except at South Burnett Regional Council's discretion.*

# INFORMATION NOTICE

| | |
|---|---|
| **Authority and Reasons for Charge** | This Infrastructure Charges Notice has been given in accordance with section 119 of the *Planning Act 2016* to support the Local government's long-term infrastructure planning and financial sustainability. |
| **Appeals** | Pursuant to section 229 and Schedule 1 of the *Planning Act 2016* a person may appeal an Infrastructure Charges Notice. Attached is an extract from the *Planning Act 2016* that details your appeal rights. |
| **Automatic Increase Provision of charge rate ($)** | An infrastructure charge levied by South Burnett Regional Council is to be increased by the difference between the Producer Price Index (PPI) applicable at the time the infrastructure charge was levied, and PPI applicable at the time of payment of the levied charge , adjusted by reference to the 3-yearly PPI average[1]. If the levied charge is increased using the method described above, the charge payable is the amount equal to the sum of the charge as levied and the amount of the increase.<br><br>However, the sum of the charge as levied and the amount of the increase is not to exceed the maximum adopted charge the Authority could have levied for the development at the time the charge is paid. |
| **GST** | The Federal Government has determined that contributions made by developers to Government for infrastructure and services under the *Planning Act* 2016 are GST exempt. |
| **Making a Payment** | This Infrastructure Charges Notice cannot be used to pay your infrastructure charges.<br><br>To pay the levied charge, you must request an Itemised Breakdown showing the total levied charge payable at the time of payment. An Itemised Breakdown must be presented at the time of payment.<br><br>An Itemised Breakdown may be requested by emailing info@southburnett.qld.gov.au |

[1] 3-yearly PPI average is defined in section 114 of the *Planning Act 2016* and means the PPI adjusted according to the 3-year moving average quarterly percentage change between financial quarters. PPI Index is the producer price index for construction 6427.0 (ABS PPI) index number 3101 – Road and Bridge construction index for Queensland published by the Australian Bureau of Statistics.

Payment can be made at any of the following South Burnett Regional Council Offices:

- 69 Hart Street, Blackbutt, 4314;
- 45 Glendon Street, Kingaroy, 4610;
- 42 Stephens Street West, Murgon, 4605;
- 48 Drayton Street, Nanango, 4615;
- McKenzie Street, Wondai, 4606; or
- via other methods identified on the Itemised Breakdown.

**Enquiries**

Enquiries regarding this Infrastructure Charges Notice should be directed to the SOUTH BURNETT REGIONAL COUNCIL, Department of Development Services, during office hours, Monday to Friday by phoning (07) 4189 9100 or email at info@southburnett.qld.gov.au

Queensland Government

SARA reference: 2401-38585 SRA
Council reference: MCU23/0034
Applicant reference: 11574K

30 September 2024

Chief Executive Officer
South Burnett Regional Council
PO Box 336
KINGAROY QLD 4610
info@sbrc.qld.gov.au

Dear Sir/Madam

# Changed Referral Agency Response—with Conditions—157 Boonenne Road, Goodger

(Given under section 28 of the Development Assessment Rules)

On 27 September 2024, the State Assessment and Referral Agency (SARA) received representations from the applicant requesting SARA change its referral agency response. SARA has considered the representations and now provides this changed referral agency response which replaces the response dated 5 August 2024.

## Response

| | |
|---|---|
| Outcome: | Referral Agency Response – with Conditions |
| Date of Response: | 30 September 2024 |
| Conditions: | The conditions in **Attachment 1** must be attached to any development approval. |
| Advice: | Advice to the applicant is in **Attachment 2**. |
| Reasons: | The reasons for the referral agency response are in **Attachment 3**. |

## Development Details

| | | |
|---|---|---|
| Description: | Development Permit | Material Change of Use for high Impact Industry (Sawmill) and Concurrent ERA 47 – Timber Milling and Wood Chipping |
| SARA Role: | Referral Agency | |
| SARA Trigger: | • Schedule 10, Part 5, Division 4, Table 2, Item 1 (10.5.4.2.1) of the Planning Regulation 2017 – Environmentally Relevant Activity (ERA) | |



Wide Bay Burnett regional office
Level 1, 7 Takalvan Street, Bundaberg
PO Box 979, Bundaberg QLD 4670

| | |
|---|---|
| | • Schedule 10, Part 9, Division 4, Subdivision 1, Table 1, Item 1 (10.9.4.1.1.1) of the Planning Regulation 2017 – Development impacting on State transport infrastructure |
| SARA Reference: | 2401-38585 SRA |
| Assessment Manager: | South Burnett Regional Council |
| Street Address: | 157 Boonenne Road, Goodger |
| Real Property Description: | Lot 4 on RP807137 |
| Applicant Name: | IMEMS Pty Ltd |
| Applicant Contact Details: | C/- ONF Surveyors<br>PO Box 896<br>KINGAROY QLD 4610<br>admin@onfsurveyors.com.au |
| Environmental Authority: | This referral included an application for an environmental authority under section 115 of the *Environmental Protection Act 1994*. Below are the details of the decision:<br>• Approved<br>• Reference: P-EA-100585794<br>• Effective Date: Date the development application referenced MCU23/0034 is approved by South Burnett Regional Council<br>• Prescribed ERA: 47(b) – Timber Milling and Woodchipping<br>If you are seeking further information on the environmental authority, the Department of Environment and Science's website includes a register. This can be found at: www.des.qld.gov.au. |
| *Human Rights Act 2019* Considerations: | A consideration of the 23 fundamental human rights protected under the *Human Rights Act 2019* has been undertaken as part of this decision. It has been determined that this decision does not limit human rights. |

## Representations

An applicant may make representations to a concurrence agency, at any time before the application is decided, about changing a matter in the referral agency response (section 30 of the Development Assessment Rules). Copies of the relevant provisions are in **Attachment 4**.

A copy of this response has been sent to the applicant for their information.

For further information please contact Cavannah Deller, Senior Planning Officer, on [redacted] or via email WBBSARA@dsdilgp.qld.gov.au who will be pleased to assist.

Yours sincerely

[redacted]

Luke Lankowski
Manager, Planning – Wide Bay Burnett

cc IMEMS Pty Ltd, admin@onfsurveyors.com.au

enc Attachment 1 – Changed Referral Agency Conditions
Attachment 2 – Advice to the Applicant
Attachment 3 – Reasons for Referral Agency Response
Attachment 4 – Representations about a Referral Agency Response Provisions

# Attachment 1—Changed Referral Agency Conditions

(Under section 56(1)(b)(i) of the *Planning Act 2016* the following conditions must be attached to any development approval relating to this application)

| No. | Conditions | Condition Timing |
|---|---|---|
| 10.9.4.1.1.1—Development impacting on State transport infrastructure—The chief executive administering the *Planning Act 2016* nominates the Director-General of the Department of Transport and Main Roads to be the enforcement authority for the development to which this development approval relates for the administration and enforcement of any matter relating to the following condition(s): | | |
| 1. | (a) Road works comprising sealing of Boonenne Road for a distance of at least 19 metres from the edge of the existing seal of Kingaroy-Cooyar Road at a minimum width of 6 metres plus turn radii for the largest design vehicle.<br>(b) The road works must be designed and constructed in accordance with the Department of Transport and Main Roads' *Road Planning and Design Manual*, *Standards* and *Specifications*. | ~~Prior to the commencement of use~~ **Once the milling of ≥10,000 tonnes of timber occurs in a calendar year** |
| 2. | Heavy vehicles as defined in the *Transport Operations (Road Use Management) Act 1995* associated with the development are only to access Boonenne Road using the Kingaroy-Cooyar Road/Boonenne Road intersection. | At all times |

# Attachment 2—Advice to the Applicant

| | |
|---|---|
| **General Advice** | |
| 1. | Terms and phrases used in this document are defined in the *Planning Act 2016,* its regulation or the State Development Assessment Provisions (SDAP) version 3.0. If a word remains undefined it has its ordinary meaning. |
| 2. | Kingaroy-Cooyar Road, at the Boonenne Road intersection, is not identified as an as-of-right B-double route. It is recommended you contact the National Heavy Vehicle Regulator on 13 NHVR (13 64 87) to investigate the permits necessary for B-double vehicles to access the development site. |
| 3. | This referral agency response includes a requirement for road works at the Kingaroy-Cooyar Road/Boonenne Road intersection. It is strongly recommended that the width of seal along Boonenne Road is adequate to permit the largest vehicle using the site to turn in or out of Boonenne Road without using the adjacent lane. |
| **Further Permits Required** | |
| 4. | Road Works Approval<br>This referral agency response includes a requirement for road works on a state-controlled road. Under section 33 of the *Transport Infrastructure Act 1994,* written approval is required to carry out road works on a state-controlled road. This approval must be obtained prior to commencing any works on the state-controlled road reserve.<br><br>The road works approval process will require detailed engineering designs of the works, certified by a Registered Professional Engineer of Queensland (RPEQ).The designs will need to demonstrate compliance with the Department of Transport and Main Roads' *Road Planning and Design Manual,* technical standards and policies.<br><br>Please contact the Department of Transport and Main Roads to make an application for road works approval via WBB.IDAS@tmr.qld.gov.au, quoting reference TMR24-041547, as soon as possible to ensure that gaining a road works approval does not delay construction.<br><br>Further information on applying for road works approval, including the required application form, can be found at https://www.tmr.qld.gov.au/Community-and-environment/Planning-and-development/Other-matters-requiring-approval#roadworks. |

# Attachment 3—Reasons for Referral Agency Response

(Given under section 56(7) of the *Planning Act 2016*)

**The reasons for SARA's decision are:**

The development is for a material change of use for high impact industry (sawmill) and ERA 47(b) – Timber milling and woodchipping. Specifically, the development is to expand the operations of an existing sawmill to allow between 10,000 tonnes and 20,000 tonnes of annual throughput.

The development on site does not impact the air, acoustic or odour environment and appropriately manages contaminants and stormwater. As such, the development complies with State code 22: Environmentally relevant activities of SDAP, with no requirements.

Conditions to seal of the Kingaroy-Cooyar Road/Boonenne Road intersection (nominated heavy vehicle route) and to specify the nominated heavy vehicle route are required to ensure the development complies with State code 6: Protection of state transport networks of SDAP.

**Material used in the assessment of the application:**

- the development application material and submitted plans
- *Planning Act 2016*
- Planning Regulation 2017
- SDAP, version 3.0, as published by SARA
- Development Assessment Rules
- SARA DA Mapping system
- State Planning Policy mapping system
- Section 58 of the *Human Rights Act 2019*

# Attachment 4— Representations about a Referral Agency Response Provisions

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# Development Assessment Rules—Representations about a referral agency response

The following provisions are those set out in sections 28 and 30 of the Development Assessment Rules[1] regarding **representations about a referral agency response**

# Part 6: Changes to the application and referral agency responses

## 28 Concurrence agency changes its response or gives a late response

28.1. Despite part 2, a concurrence agency may, after its referral agency assessment period and any further period agreed ends, change its referral agency response or give a late referral agency response before the application is decided, subject to section 28.2 and 28.3.

28.2. A concurrence agency may change its referral agency response at any time before the application is decided if—

(a) the change is in response to a change which the assessment manager is satisfied is a change under section 26.1; or

(b) the Minister has given the concurrence agency a direction under section 99 of the Act; or

(c) the applicant has given written agreement to the change to the referral agency response.[2]

28.3. A concurrence agency may give a late referral agency response before the application is decided, if the applicant has given written agreement to the late referral agency response.

28.4. If a concurrence agency proposes to change its referral agency response under section 28.2(a), the concurrence agency must—

(a) give notice of its intention to change its referral agency response to the assessment manager and a copy to the applicant within 5 days of receiving notice of the change under section 25.1; and

(b) the concurrence agency has 10 days from the day of giving notice under paragraph (a), or a further period agreed between the applicant and the concurrence agency, to give an amended referral agency response to the assessment manager and a copy to the applicant.

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1 Pursuant to Section 68 of the *Planning Act 2016*

2 In the instance an applicant has made representations to the concurrence agency under section 30, and the concurrence agency agrees to make the change included in the representations, section 28.2(c) is taken to have been satisfied.

# Part 7: Miscellaneous

## 30 Representations about a referral agency response

30.1. An applicant may make representations to a concurrence agency at any time before the application is decided, about changing a matter in the referral agency response.[3]

[3] An applicant may elect, under section 32, to stop the assessment manager's decision period in which to take this action. If a concurrence agency wishes to amend their response in relation to representations made under this section, they must do so in accordance with section 28.

# Permit

***Environmental Protection Act 1994***

## Environmental authority P-EA-100585794

*This environmental authority is issued by the administering authority under Chapter 5 of the* Environmental Protection Act 1994.

### Environmental authority number: P-EA-100585794

**Environmental authority takes effect on the date** that your related development approval MCU23/0034 takes effect. This is the take effect date.

Within 5 business days of the environmental authority taking effect, the administering authority must be given written notice of the occurrence. Prior to the commencement of the activity, the administering authority must be given written notice of the proposed date of commencement.

The first annual fee is payable within 20 business days of the take effect date.

The anniversary date of this environmental authority is the same day each year as the take effect date. The payment of the annual fee will be due each year on this day.

### Environmental authority holder(s)

| Name(s) | Registered address |
|---|---|
| ETK ENTERPRISES PTY LTD | 157 Boonenne Rd<br>KINGAROY QLD 4610 |

### Environmentally relevant activity and location details

| Environmentally relevant activity/activities | Location(s) |
|---|---|
| ERA 47 - Timber milling and woodchipping - (b) - Milling, in a year, the following total quantity of timber - more than 10,000t but not more than 20,000t | 4/RP807137 |

#### Additional information for applicants

Environmentally relevant activities

The description of any environmentally relevant activity (ERA) for which an environmental authority (EA) is issued is a restatement of the ERA as defined by legislation at the time the EA is issued. Where there is any inconsistency between that description of an ERA and the conditions stated by an EA as to the scale, intensity or manner of carrying out an ERA, the conditions prevail to the extent of the inconsistency.

An EA authorises the carrying out of an ERA and does not authorise any environmental harm unless a condition stated by the EA specifically authorises environmental harm.

A person carrying out an ERA must also be a registered suitable operator under the *Environmental Protection Act 1994* (EP Act).

Mobile and temporary activities

If you operate a mobile and temporary environmentally relevant activity (ERA), other than regulated waste transport, you are required to maintain a work diary. You must:

- use the approved form for a work diary (ESR/2015/1696);
- keep the work diary records for 2 years after the last entry;
- inform the administering authority within 7 days of the work diary being lost or stolen;
- record the information required in the work diary for each location within 1 day of leaving the location.

Contaminated land

It is a requirement of the EP Act that an owner or occupier of contaminated land give written notice to the administering authority if they become aware of the following:

- the happening of an event involving a hazardous contaminant on the contaminated land (notice must be given within 24 hours); or
- a change in the condition of the contaminated land (notice must be given within 24 hours); or
- a notifiable activity (as defined in Schedule 3) having been carried out, or is being carried out, on the contaminated land (notice must be given within 20 business days)

that is causing, or is reasonably likely to cause, serious or material environmental harm.

For further information, including the form for giving written notice, refer to the Queensland Government website www.qld.gov.au, using the search term 'duty to notify'.

Take effect

Please note that, in accordance with section 200 of the EP Act, an EA has effect:

a) if the authority is for a prescribed ERA and it states that it takes effect on the day nominated by the holder of the authority in a written notice given to the administering authority - on the nominated day; or

b) if the authority states a day or an event for it to take effect-on the stated day or when the stated event happens; or

c) otherwise - on the day the authority is issued.

However, if the EA is authorising an activity that requires an additional authorisation (a relevant tenure for a resource activity, a development permit under the *Planning Act 2016* or an SDA Approval under the *State Development and Public Works Organisation Act 1971*), this EA will not take effect until the additional authorisation has taken effect.

If this EA takes effect when the additional authorisation takes effect, you must provide the administering authority written notice within 5 business days of receiving notification of the related additional authorisation taking effect.

The anniversary day of this environmental authority is the same day each year as the effective date. The payment of the annual fee will be due each year on this day. An annual return will be due each year on 01 April.

If you have incorrectly claimed that an additional authorisation is not required, carrying out the ERA without the additional authorisation is not legal and could result in your prosecution for providing false or misleading information or operating without a valid environmental authority.

| [redacted] | **9 September 2024** |
|---|---|
| Signature | Date |

Tristan Roberts
Department of Environment, Science and Innovation
Delegate of the administering authority
*Environmental Protection Act 1994*

**Enquiries:**
Energy and Extractive Resources
GPO Box 2454, BRISBANE QLD 4001
Phone: (07) 3330 5715
Email: [redacted]

**Obligations under the *Environmental Protection Act 1994***

In addition to the requirements found in the conditions of this environmental authority, the holder must also meet their obligations under the EP Act, and the regulations made under the EP Act. For example, the holder must comply with the following provisions of the Act:

- general environmental duty (section 319)
- duty to notify environmental harm (section 320-320G)
- offence of causing serious or material environmental harm (sections 437-439)
- offence of causing environmental nuisance (section 440)
- offence of depositing prescribed water contaminants in waters and related matters (section 440ZG)
- offence to place contaminant where environmental harm or nuisance may be caused (section 443)

**Other permits required**

This permit only provides an approval under the *Environmental Protection Act 1994*. In order to lawfully operate you may also require permits / approvals from your local government authority, other business units within the department and other State Government agencies prior to commencing any activity at the site. For example, this may include permits / approvals with your local Council (for planning approval), the Department of Transport and Main Roads (to access State controlled roads), the Department of Resources (to clear vegetation), and the Department of Agriculture and Fisheries (to clear marine plants or to obtain a quarry material allocation).

**Obligations under the *Mining and Quarrying Safety and Health Act 1999***

If you are operating a quarry, other than a sand and gravel quarry where there is no crushing capability, you will be required to comply with the *Mining and Quarrying Safety and Health Act 1999*. For more information on your obligations under this legislation contact Mine Safety and Health at www.resources.qld.gov.au, or phone 13 QGOV ( 13 74 68 ) or your local Mines Inspectorate Office.

**Development Approval**

This permit is not a development approval under the *Planning Act 2016*. The conditions of this environmental authority are separate, and in addition to, any conditions that may be on the development approval. If a copy of this environmental authority is attached to a development approval, it is for information only, and may not be current. Please contact the Department of Environment and Science to ensure that you have the most current version of the environmental authority relating to this site.

**Conditions of environmental authority**

| **Agency interest: General** | |
|---|---|
| **Condition number** | **Condition** |
| G1 | Activities under this environmental authority must be conducted in accordance with the following limitations:<br>1. The amount of timber milled must not exceed 16,000 tonnes per annum, except following a natural disaster or other unprecedented weather event, or upon direction from a statutory authority (e.g. Department of Agriculture and Fisheries) where an additional 4,000 tonnes may be processed in surplus.<br>2. Chainsaw operations must not occur before 7am and after 6pm Mondays to Saturdays.<br>3. Deliveries and removals by heavy vehicles are limited between 7am and 6pm Mondays to Saturdays.<br>4. Only maintenance works are allowed to occur on Sundays.<br>5. Operations must occur in accordance with Appendix 1 – Site Layout Plan. |
| G2 | The person undertaking the activity to which this environmental authority relates must:<br>1. at monthly intervals, make a record of the total amount, in tonnes, of timber milled at the approved place for the preceding month;<br>2. at the end of each anniversary year, calculate and make a record of the total amount of timber milled over that year;<br>3. keep record of any surplus timber milled in a calendar year in accordance with the exceptions stated in condition G1-1; and<br>4. provide this documentation to the administering authority upon request. |
| G3 | All reasonable and practicable measures must be taken to prevent or minimise environmental harm caused by the activities. |
| G4 | Any breach of a condition of this environmental authority must be reported to the administering authority as soon as practicable within 24 hours of becoming aware of the breach. Records must be kept including full details of the breach and any subsequent actions taken. |
| G5 | Other than as permitted by this environmental authority, the release of a contaminant into the environment must not occur. |
| G6 | Environmental monitoring results must be kept until surrender of this environmental authority. All other information and records that are required by the conditions of this environmental authority must be kept for a minimum of five (5) years. Upon request, all information and records required by the conditions of this environmental authority must be provided to the administering authority, or nominated delegate, within the required timeframe and in the specified format. |
| G7 | An appropriately qualified person(s) must monitor, record and interpret all parameters that are required to be monitored by this environmental authority and in the manner specified by this |

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|---|---|
| | environmental authority. |
| G8 | All analyses required under this environmental authority must be carried out by a laboratory that has National Association of Testing Authorities (NATA) certification, or an equivalent certification, for such analyses. |
| G9 | When required by the administering authority, monitoring must be undertaken in the manner prescribed by the administering authority, to investigate a complaint of environmental nuisance arising from the activity. The monitoring results must be provided within 10 business days to the administering authority upon its request. |
| G10 | The activity must be undertaken in accordance with written procedures that:<br>1. identify potential risks to the environment from the activity during routine operations, closure and an emergency;<br>2. establish and maintain control measures that minimise the potential for environmental harm;<br>3. ensure plant, equipment and measures are maintained in a proper and effective condition;<br>4. ensure plant, equipment and measures are operated in a proper and effective manner<br>5. ensure that staff are trained and aware of their obligations under the *Environmental Protection Act 1994;* and<br>6. ensure that reviews of environmental performance are undertaken at least annually. |
| G11 | Chemicals and fuels in containers of greater than 15 litres must be stored within a secondary containment system. |
| G12 | The following details must be recorded for all complaints received and provided to the administering authority upon request:<br>1. Date and time the complaint was received; and<br>2. If authorised by the person making the complaint, their name and contact details; and<br>3. Nature and details of the complaint. |
| G13 | As soon as reasonably practicable but no later than 5 business days of receiving a complaint (or a longer period agreed to in writing by the administering authority), an investigation must be undertaken to determine:<br>1. The potential circumstances and actions on site that may have contributed to the basis of the complaint; and<br>2. Reasonable and practicable measures that will be implemented to address the complaint. |
| G14 | As soon as reasonably practicable but no later than 5 business days of investigating a complaint under condition G13 (or a longer period agreed to in writing by the administering authority), the reasonable and practicable measures identified in the investigation must be implemented. |

| | |
|---|---|
| G15 | The outcome of the investigation carried out under condition G13 and the reasonable and practicable measures implemented under condition G14 must be recorded. |
| **Agency interest: Waste** | |
| **Condition number** | **Condition** |
| W1 | All waste generated in carrying out the activity must be reused, recycled or removed to a facility that can lawfully accept the waste. |
| W2 | Waste material produced by the activity must not be burned. |
| W3 | Waste stockpiles must be managed and maintained to minimise the release of dust to the atmosphere and reduce risk of combustion. This must include at a minimum:<br>1. appropriate stockpile heights and widths;<br>2. appropriate separation distances between stockpiles;<br>3. dust suppression systems; and<br>4. weekly removals of stockpiled waste. |
| **Agency interest: Air** | |
| **Condition number** | **Condition** |
| A1 | Other than as permitted within this environmental authority, odours or airborne contaminants must not cause environmental nuisance to any sensitive place or commercial place. |
| A2 | Dust and particulate matter emissions must not exceed the following concentrations at any sensitive place or commercial place:<br>a) dust deposition of 120 milligrams per square metre per day, averaged over 30 days, when monitored in accordance with the latest edition of Australian Standard AS/NZS 3580.10.1 Methods for sampling and analysis of ambient air, Method 10.1: Determination of particulate matter – Deposited matter – Gravimetric method; or<br>b) a concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (µm) (PM10) suspended in the atmosphere of 50 micrograms per cubic metre over a 24-hour averaging time, when monitored in accordance with the latest edition of the relevant Australian Standards. |

| | |
|---|---|
| A3 | Point source emissions of contaminants must only be released to air in accordance with the parameters listed in *Table – Point source air release limits*.<br>**Table – Point source air release limits**<br>**Release Point (GDA 2020)** / **Contaminant** / **Maximum Release Limit** / **Monitoring Frequency**<br>**Reference** / **Latitude** / **Longitude**<br>*Green mill chipper cyclone* / -26.61509 / 151.80907 / *Solid particles (dust)* / *50 mg/m³* / *Upon request by the administering authority* |
| A4 | Air quality monitoring, including for dust and point source emissions from the activity, must be undertaken in accordance with the latest edition of:<br>a) the relevant Australian Standards; or<br>a) a method approved by any other Australian, European or North American jurisdiction/EPAs (if monitoring requirements are not described in the Australian Standards); or<br>b) a method approved by the administering authority. |
| A5 | An effective dust suppression system must be installed, operated and maintained on mechanical processing equipment to minimise the release of dust to the atmosphere. |
| A6 | Trafficable areas must be maintained using reasonable and practicable measures necessary to minimise the release of dust to the atmosphere. |

| **Agency interest: Land** | |
|---|---|
| **Condition number** | **Condition** |
| L1 | Other than as permitted within this environmental authority, contaminants must not be released to land. |
| L2 | Erosion and sediment control measures must be implemented and maintained at all times that:<br>1. minimise erosion and the release of sediment within areas disturbed by the activity; and<br>2. prevent releases from the activity causing erosion outside of areas disturbed by the activity; and<br>3. prevent the release of sediment from areas disturbed by the activity to the receiving environment. |
| L3 | Disturbance to areas as a result of carrying out activities conducted under this environmental authority must be rehabilitated so that:<br>a) The potential for erosion and sedimentation is minimised;<br>b) The potential for environmental nuisance caused by dust is prevented;<br>c) Land and water do not contain contaminants capable of causing environmental harm; |

<table>
<tr><td></td><td>d) The landform is in stable condition;<br>e) The top layer of the soil profile is re-instated consistent with surrounding soils;<br>f) The land is re-profiled to original contours and established drainage lines; and<br>g) The land is vegetated with groundcover that is established, actively growing, self-sustaining and is not a declared pest species.</td></tr>
<tr><td colspan="2">Agency interest: Acoustic</td></tr>
<tr><td>Condition number</td><td>Condition</td></tr>
<tr><td>N1</td><td>Other than as permitted within this environmental authority, noise generated by the activity must not cause environmental nuisance to any sensitive place or commercial place.</td></tr>
<tr><td>N2</td><td>Noise from the activity must not include substantial low frequency noise components and must not exceed the levels identified in Table - Noise limits at any sensitive place or commercial place.<br>Table - Noise limits
<table>
<tr><th></th><th colspan="3">Monday to Friday</th><th colspan="2">Saturday</th></tr>
<tr><th></th><th>6am-7am</th><th>7am–6pm</th><th>6pm–6am</th><th>7am–6pm</th><th>6pm–7am</th></tr>
<tr><th></th><th colspan="3">Noise measured at the sensitive place</th><th colspan="2">Noise measured at the sensitive place</th></tr>
<tr><td>LAeq, adj, T</td><td>37</td><td>43</td><td>Not audible</td><td>43</td><td>Not audible</td></tr>
<tr><td>LAmax</td><td>44</td><td>No limit</td><td>Not audible</td><td>No limit</td><td>Not audible</td></tr>
<tr><th></th><th colspan="3">Noise measured at the commercial place*</th><th colspan="2">Noise measured at the commercial place*</th></tr>
<tr><td>LAeq, adj, T</td><td>50</td><td>50</td><td>Not audible</td><td>50</td><td>Not audible</td></tr>
</table>
* Any residential dwelling located within the lot on plans to which this authority applies are not considered to be a sensitive place, so long as a contractual arrangement exists between you and the owner of the dwelling.</td></tr>
<tr><td>N3</td><td>All monitoring of noise emissions from the activity must be undertaken when the activity is in operation.</td></tr>
<tr><td>N4</td><td>The following must be recorded when undertaking monitoring of noise emissions from the activity:<br>1. All equipment in operation at the time of the noise measurement; and<br>2. The mode of operation at the time of the noise measurement.</td></tr>
<tr><td>N5</td><td>Noise measurements must be taken using a class 1 sound level meter as classified under AS IEC 61672.</td></tr>
</table>

| | |
|---|---|
| N6 | All monitoring of noise emissions from the activity must be undertaken in accordance with the most recent version of Queensland Government's 'Noise Measurement Manual' (ESR/2016/2195), the relevant Australian Standard and the Environmental Protection Regulation 2019 (Chapter 5, Part 4). |
| N7 | When required by the administering authority, noise monitoring must be undertaken in accordance with the associated monitoring requirements of *Table - Noise Limits*, and the results notified within 14 days to the administering authority. Monitoring must include:<br>1. LAeq, adj, T<br>2. Background noise (Background) as LA 90, adj, T<br>3. MaxLpA,T<br>4. the level and frequency of occurrence of any impulsive or tonal noise<br>5. atmospheric conditions including wind speed and direction<br>6. effects due to extraneous factors such as traffic noise<br>7. recording of location, date and time of measurements. |

| **Agency interest: Water** | |
|---|---|
| **Condition number** | **Condition** |
| WA1 | Other than as permitted within this environmental authority, contaminants must not be released to any waters. |
| WA2 | Stormwater must be managed to:<br>a) prevent stormwater from being contaminated by the activity; or<br>b) direct stormwater that is contaminated by the activity to stormwater treatment and retention measures. |
| WA3 | Where onsite stormwater basin(s) cannot meet the storage capacity to contain a 24-hour storm event with an ARI of 1 in 5 years, a high efficiency basin must be installed and operated. |
| WA4 | Sediment collected in stormwater basin(s) must be removed whenever the volume of the basin is reduced by 30 percent, or on other occasions as required by the administering authority, such as where sediments are contaminated, or where a build-up of sediments has occurred or may occur around the outlet structure. |
| WA5 | The capacity of onsite contaminated stormwater retention must be reinstated as soon as practicable and otherwise within 5 days of a rainfall event. |
| WA6 | Drainage through and from all trafficable areas and production activities must be designed to minimise surface flow velocities. |

WA7

All ponds, dams or similar stormwater treatment and retention measures must be fitted with a bypass mechanism that diverts stormwater from entering into the measure once the capacity of the measure has been reached.

WA8

Settled/ treated stormwater must only be released at SW1 and SW2 where an agreement with the receiving landholder is in place, or at SW3, and in compliance with the release limits prescribed in *Table – Contaminant release points and release limits.*

**Table – Contaminant release points and release limits**

| Release and monitoring point(s) description (GDA2020) | | | Quality characteristic | Release type | | Minimum monitoring frequency |
|---|---|---|---|---|---|---|
| | | | | Limit | Type | |
| ID | Latitude | Longitude | | | | |
| SW1 | -26.61486 | 151.80990 | pH (pH units) | 6.0-8.5 | range | Within 24hours prior to release event, and weekly during any discharge |
| SW2 | -26.61534 | 151.80997 | Suspended Solids (mg/L) | 50 | maximum | |
| | | | Electrical conductivity (EC) µS/cm | 3000 | maximum | |
| SW3 | -26.61221 | 151.81033 | | | | |

Associated monitoring requirements

1. Monitoring location and release points must be situated and maintained in accordance with the Release and monitoring point(s) description (GDA2020) in *Table – Contaminant release points and release limits*.
2. Water and sediment samples must be representative of the general condition of the water body or sediments.
3. All determinations must employ analytical practical quantification limits of sufficient sensitivity to enable comparisons to be made against water quality objectives/triggers/limits relevant to the particular water or sediment quality characteristic.
4. Monitoring must be undertaken during a release and at the frequency stated.
5. All monitoring devices must be calibrated and maintained according to the manufacturer's instruction manual.

WA9

The following information must be recorded in relation to all water monitoring required under the conditions of this environmental authority:

1. the date on which the sample was taken; and
2. the time at which the sample was taken; and
3. the monitoring point at which the sample was taken; and

| | |
|---|---|
| | 4. the measured or estimated daily quantity of water released from each release points; and<br>5. the measured or estimated release flow rate at the time of sampling for each release point; and<br>6. the results of all monitoring and details of any exceedances of the conditions of this environmental authority. |
| WA10 | Treated stormwater must only be released to land via release points SW1, SW2 or SW3, as identified in *Table – Contaminant release points and release limits*, for the following reasons:<br>a) beneficial reuse of contained stormwater runoff on site is not viable; and<br>b) the release is necessary to maintain stormwater basin retention capacity; and<br>c) the release is in accordance with condition WA8; and<br>d) the release to land must not cause scouring or any form of erosion; and<br>e) the release to land must not contain any other properties at a concentration capable of causing environmental harm. |

**Definitions**

Key terms and/or phrases used in this document are defined in this section. Where a term is not defined, the definition in the *Environmental Protection Act 1994*, its regulations or environmental protection policies must be

**24-hour rainfall event with an Annual Exceedance Probability of 10%** means the maximum design rainfall depth from a 24-hour duration precipitation event with an annual exceedance probability of 10%.

The Design Rainfall Depth (mm) for an AEP probability of 10% over a 24-hour duration can be calculated for your location using the Intensity–Frequency–Duration (IFD) Design Rainfall Data System on the Bureau of Meteorology website.

**Activity** means the environmentally relevant activities, whether resource activities or prescribed activities, to which the environmental authority relates.

**Administering authority** means the Department of Environment, Science and Innovation or its successors.

**Annual exceedance probability (AEP)** means the probability that a given rainfall total accumulated over a given duration will be exceeded in any one year.

**Appropriately qualified person(s)** means a person or persons who has professional qualifications, training, skills or experience relevant to the EA requirement and can give authoritative assessment, advice and analysis in relation to the EA requirements using the relevant protocols, standards, methods or literature.

**Background** means noise, measured in the absence of the noise under investigation, as $\mathbf{L_{A\ 90,\ adj,\ T}}$ being the A-weighted sound pressure level exceeded for 90 per cent of the time period of not less than 15 minutes, using Fast response.

**Certified professional in erosion and sediment control (CPESC)** is a person who is currently a Certified Professional in Erosion and Sediment Control with the International Erosion Control Association (IECA) Australasia.

**Commercial place** means a place used as a workplace, an office or for business or commercial purposes and includes a place within the curtilage of such a place reasonably used by persons at that place.

**Disturbed areas** include areas:

1. that are susceptible to erosion;
2. that are contaminated by the activity; and/or
3. upon which stockpiles of soil or other materials are located.

**Environmental nuisance** as defined in Chapter 1 of the *Environmental Protection Act 1994*.

**Groundwater** means water that occurs naturally in, or is introduced artificially into, an aquifer.

**Land** means any land, whether above or below the ordinary high-water mark at spring tides (i.e. includes tidal land).

$\mathbf{L_{Aeq,\ adj,\ T}}$ means the adjusted A weighted equivalent continuous sound pressure level measured on fast response, adjusted for tonality and impulsiveness, during the time period T, where T is measured for a period no less than 15 minutes when the activity is causing a steady state noise, and no shorter than one hour when the approved activity is causing an intermittent noise.

$\mathbf{Max_{LpA,T}}$ means the maximum A-weighted sound pressure level measured over a time period T of not less than 15 minutes, using Fast response.

**Measures** has the broadest interpretation and includes:

- Procedural measures such as standard operating procedures for dredging operations, environmental risk assessment, management actions, departmental direction and competency expectations under relevant guidelines
- Physical measures such as plant, equipment, physical objects (such as bunding, containment systems

etc.), ecosystem monitoring and bathymetric surveys.

**NATA** means National Association of Testing Authorities.

**Nominated delegate** means another government agency that provides services to the administering authority.

**Prescribed water contaminants** means contaminants listed within Schedule 10 of the Environmental Protection Regulation 2019.

**Records** include breach notifications, written procedures, analysis results, monitoring reports and monitoring programs required under a condition of this authority.

**Release of a contaminant into the environment** means to:

1. deposit, discharge, emit or disturb the contaminant
2. cause or allow the contaminant to be deposited, discharged, emitted or disturbed
3. fail to prevent the contaminant from being deposited, discharged emitted or disturbed
4. allow the contaminant to escape
5. fail to prevent the contaminant from escaping.

**Secondary containment system** means a system designed, installed and operated to prevent any release of contaminants from the system, or containers within the system, to land, groundwater, or surface waters.

**Sensitive place** includes the following and includes a place within the curtilage of such a place reasonably used by persons at that place:

1. a dwelling, residential allotment, mobile home or caravan park, residential marina or other residential premises; or
2. a motel, hotel or hostel; or
3. a kindergarten, school, university or other educational institution; or
4. a medical centre or hospital; or
5. a protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 2004* or a World Heritage Area; or
6. a public park or garden; or
7. for noise, a place defined as a sensitive receptor for the purposes of the Environmental Protection (Noise) Policy 2019.

**Substantial low frequency noise** means a noise emission that has an unbalanced frequency spectrum shown in a one-third octave band measurements, with a predominant component within the frequency range 10 to 200 Hz. It includes any noise emission likely to cause an overall sound pressure level at a noise sensitive place exceeding 55 dB(Z).

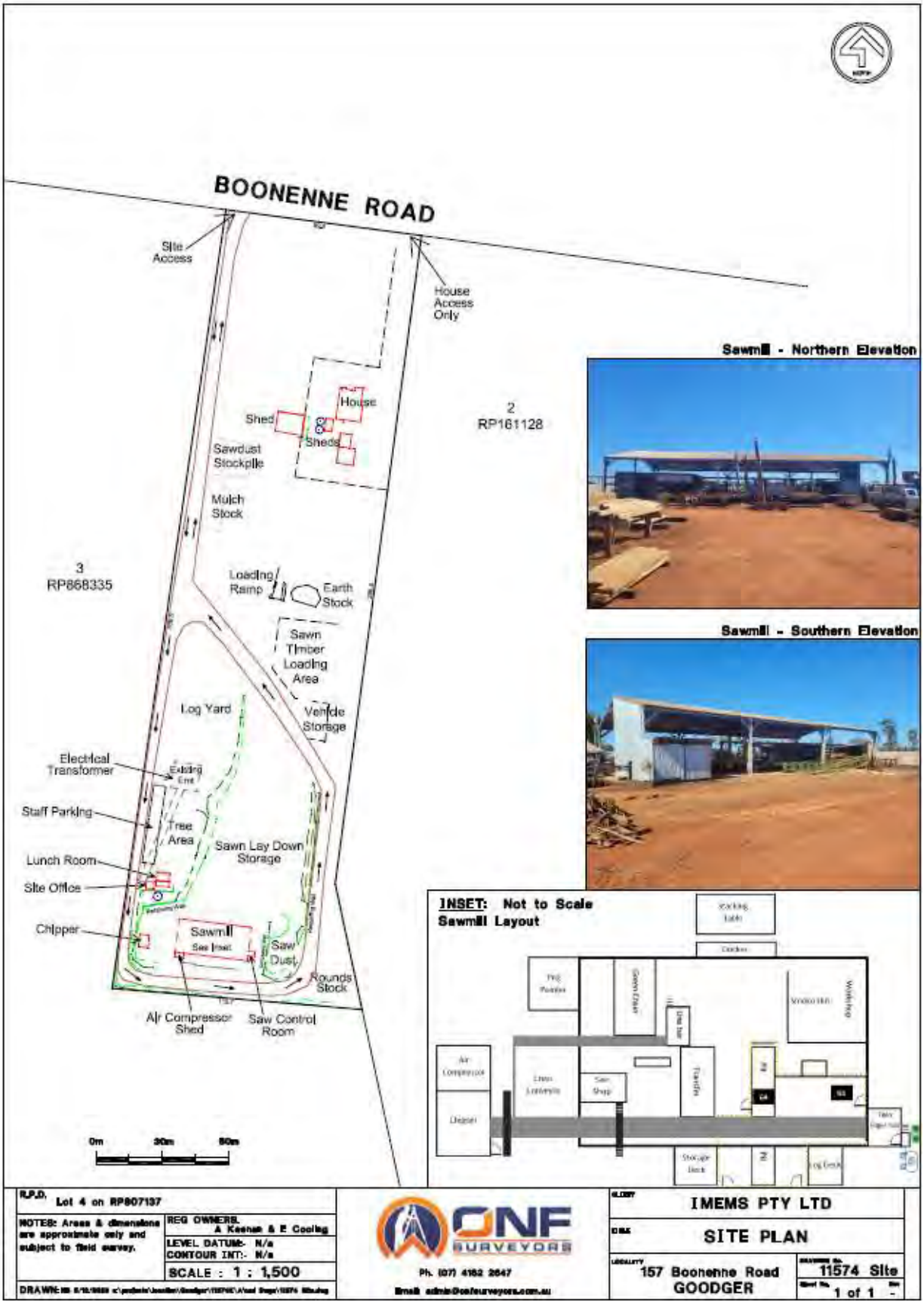
**Stormwater treatment and retention measures** includes stormwater dams/ponds and sediment dams/ponds.

**Vibration** is the oscillating or periodic motion of a particle, group of particles, or solid object about its equilibrium position.

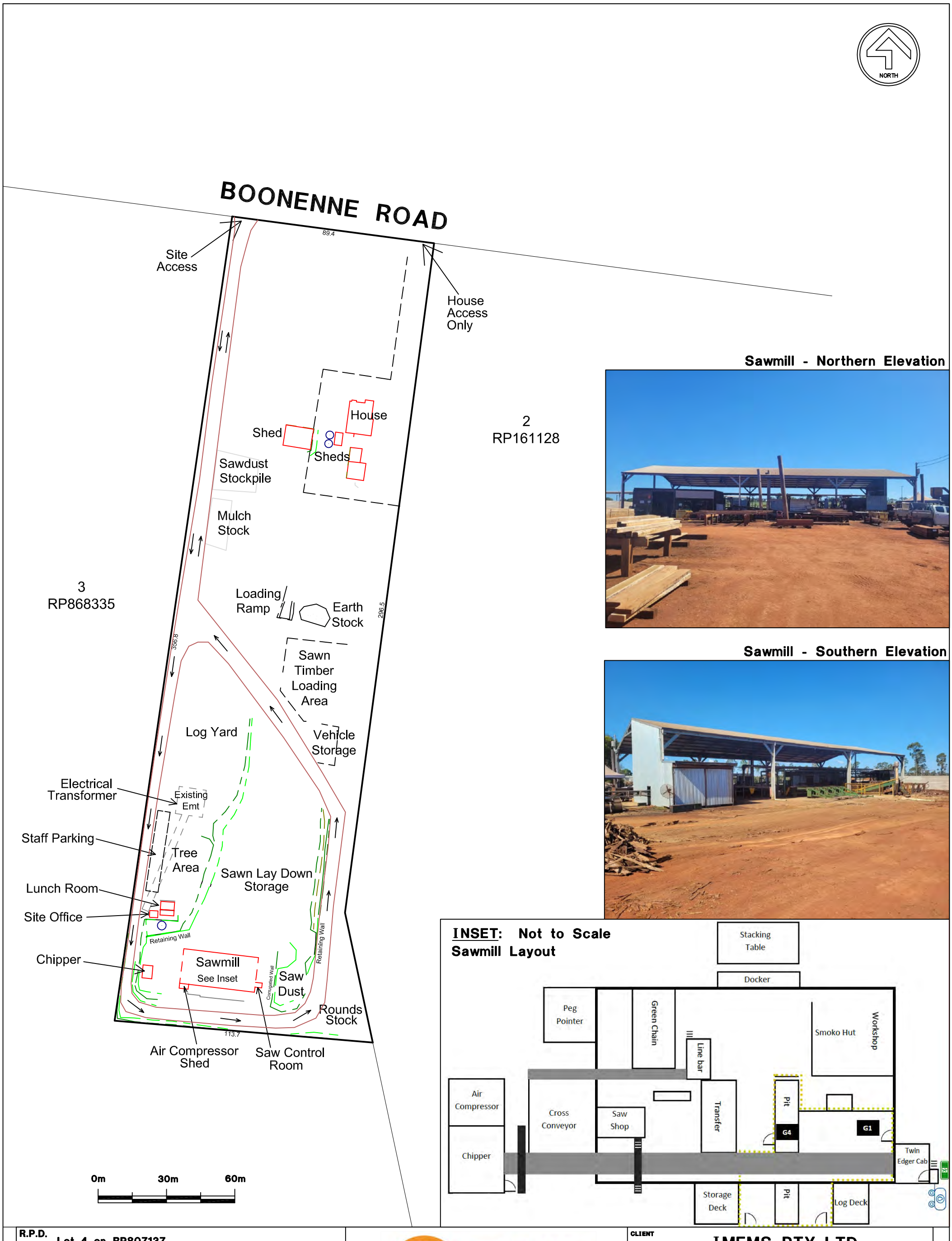
**Waters** includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water, natural or artificial watercourse, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and groundwater and any part thereof.

**You** means the holder of the environmental authority.

**Appendix 1 – Site layout plan**



**END OF ENVIRONMENTAL AUTHORITY**




| | |
|---|---|
| R.P.D. Lot 4 on RP807137 | |
| NOTES: Areas & dimensions are approximate only and subject to field survey. | REG OWNERS. A Keenan & E Cooling |
| | LEVEL DATUM:- N/a<br>CONTOUR INT:- N/a |
| | SCALE : 1 : 1,500 |
| DRAWN: NB 5/12/2023 s:\projects\location\Goodger\11574K\A'cad Dwgs\11574 Site.dwg | |


ONF SURVEYORS
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Email: admin@onfsurveyors.com.au


| | |
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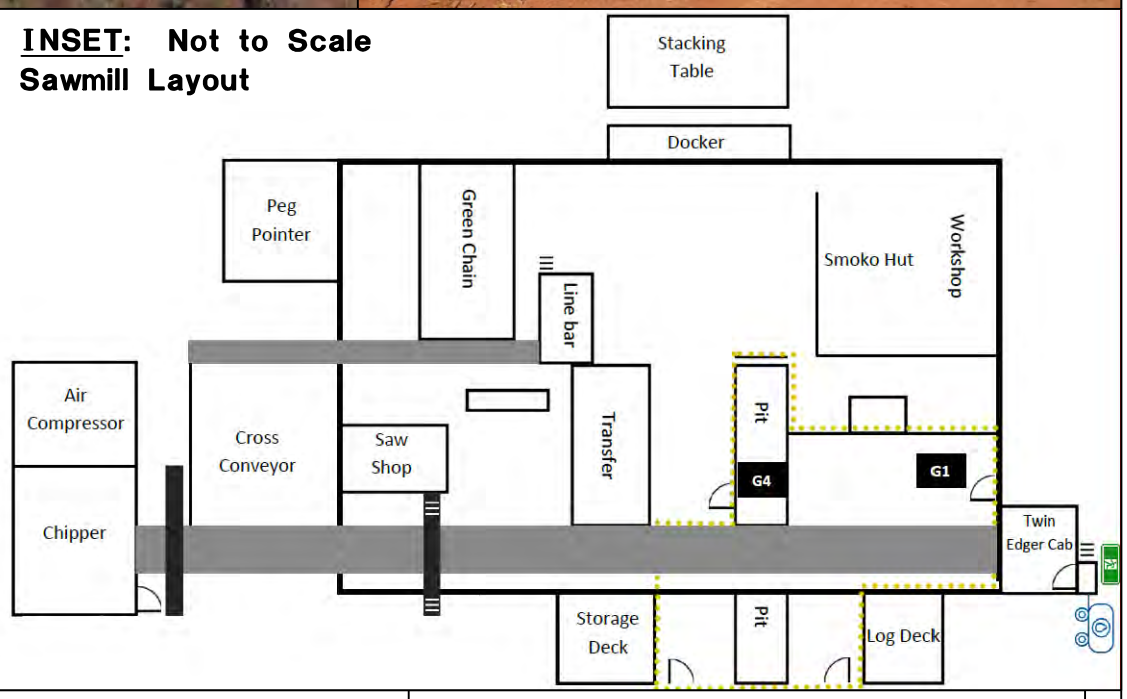
| CLIENT | IMEMS PTY LTD |
| TITLE | SITE PLAN |
| LOCALITY | 157 Boonenne Road GOODGER |
| DRAWING No. | 11574 Site |
| Sheet No. | 1 of 1 |
| Rev | - |

NORTH


**Sawmill - Northern Elevation**

**Sawmill - Southern Elevation**

**INSET: Not to Scale**
**Sawmill Layout**




| | |
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| R.P.D. Lot 4 on RP807137 | |
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| Sheet No. | 1 of 1 |
| Rev | - |

# SUPPORTING DOCUMENT

## Development Application Material Change of Use:

## Application for Environmental Authority

## ERA 47(b) Sawmilling & Woodchipping

UPDATED: 28 FEBRUARY 2025

Boonenne Timbers

157 Boonenne Road, Goodger Qld 4610

Lot 4 RP807137

for

BOONENNE TIMBERS

ABN 74 624 946 904

# PROJECT INFORMATION

| | |
|---|---|
| **Report Title:** | Supporting Document for Application for Environmental Authority ERA 47(b) |
| **Report Preparation:** | IMEMS PTY LTD |

**Document Status**

| Version | Personnel | Activity | Date completed | Signature |
|---|---|---|---|---|
| DRAFT | DB, MT, PA | Draft Supporting Document for client review & meeting with Council | 16 January 2023 | [redacted] |
| DRAFT | DB, MT, PA | Draft Supporting Document for RA Application | 30 OCTOBER 2023 | |
| FINAL | DB, MT, PA | Supporting Document for RA Application | 30 NOVEMBER 2023 | |
| UPDATED | PA | Update to Supporting Document Including Additional Expert Assessments to support Negotiated Decision to the existing Development Approval | 28 February 2025 | |

| **Distribution** | **Final Copies to:** | **Number** |
|---|---|---|
| | South Burnett Regional Council, Department of Environment & Science (DES) | 1 electronic |
| | Boonenne Timbers | 1 electronic |
| | IMEMS Pty Ltd | 1 electronic |

| | |
|---|---|
| **Project Manager** | Paul Anderson (CEnvP no.197, CEnvP Contaminated Land Specialist no.40010, MEnvMan, MSc, BAppSc) of IMEMS Pty Ltd. Fellow EIANZ, Full member: ASM (Aus), ASSSI, ALGA, WMAA, IECA. |
| **Client:** | BOONENNE TIMBERS |
| **Client Contact/s:** | Andrew Keenan and Elizabeth Keenan |
| **Prepared by** | IMEMS Pty Ltd<br>Ph: 5478 8422 Fax 5478 8633<br>PO Box 411 PALMWOODS Q 4555 |
| **Version:** | **© 28 FEBRUARY 2025** |
| **Document file path:** | [redacted] |

# LIMITATIONS OF REPORT

The scope is limited to presenting relevant information and documentation to support application for Environmental Authority (EA) for ***ERA 47(b) – Timber milling and woodchipping more than 10,000t but not more than 20,000t in a year*** on behalf of the Boonenne Timbers and is based on information supplied and site inspections undertaken. The outcomes are based upon the following:

- Observations of the project site and its vicinity;
- Review of information provided by Boonenne Timbers; and
- Publicly available data published by Local Authority and Qld Government departments.

Neither IMEMS Pty Ltd, nor any reputable consultant can provide unqualified warranties, nor does IMEMS Pty Ltd assume any liability for:

- Site conditions not observed or accessible during the time of site visits and inspections;
- Site characteristics and operations that have changed since the time of site visits; and
- Information, data or documentation not made available during the review process or that which has changed since the site visit or since being made available.

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Appendix 4: Boonenne Timbers DRAFT Environmental Issues Register

Appendix 5: State Assessment and Referral Agency (SARA) *Information Request* (IR) notice (6 February 2024). Response to SARA IR (IMEMS May 2024). PSA Consulting *Traffic Engineering Response* December 2024.

# 1 INTRODUCTION

ETK Enterprises Pty Ltd trading as Boonenne Timbers currently operates a sawmilling operation, at <5,000 tonne/year at 157 Boonenne Road, Goodger described as Lot 4 RP807137 (the site). ***Diagram 1*** shows the site location. ***Section 3*** describes the site setting in more detail.

Boonenne Timbers proposes to submit to Department of Environment & Science (DES) an Application for Environmental Authority (EA) for prescribed Environmentally Relevant Activity (ERA) ***47 – Timber milling and woodchipping (b) more than 10,000t but not more than 20,000t in a year.***

Along with this EA application, Boonenne Timbers is submitting to South Burnett Regional Council (SBRC) a Development Application (DA) Material Change of Use for the proposed activity – operating a sawmill > 10,000 tonnes per annum (tpa), < 20,000 tpa.

ETK Enterprises Pty Ltd trading as Boonenne Timbers has acquired Registered Suitable Operator number 100522897, as required by EA holders under current legislation. `

This supporting document has been prepared to accompany the application for an EA proposed to be made to DES and is also provided to SBRC for information to assist the DA MCU process. It describes the site setting and proposed activities. ***Section 7*** identifies the environmental values potentially impacted by timber milling (**the activity**), evaluates potential impacts of the activity on environmental values, and details strategies to manage potential impacts on environmental values. A Draft Environmental Issues Register detailing environmental issues, risks and opportunities associated with the activity has been prepared for inclusion with the application to DES.

# 2 BACKGROUND

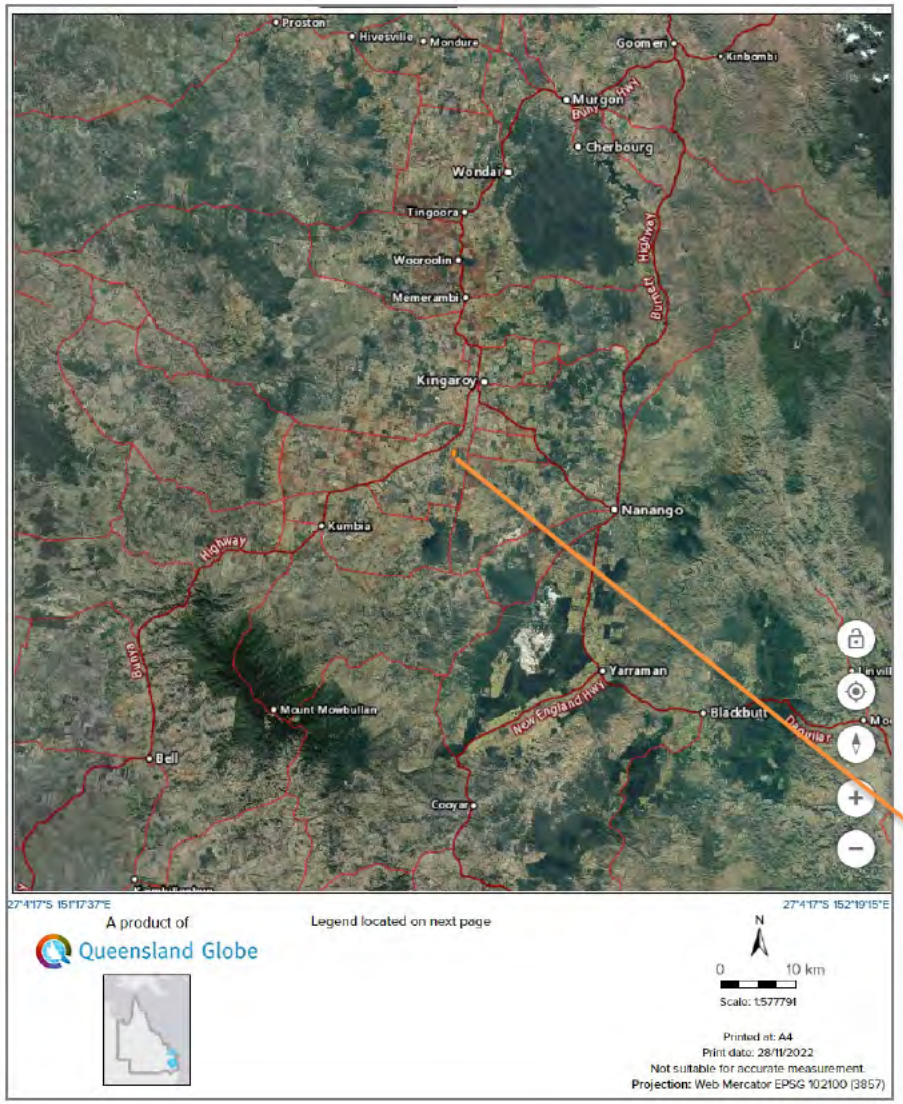
Boonenne Timbers has operated a timber milling activity at the site since 1997, initially producing hardwood railway sleepers. The business has since established a market for hardwood landscaping and construction timbers. Boonenne Timbers currently employees 13 full time and casual staff on site, 10 contractors (log haulage, by-product management) and additional off site sales staff in the Brisbane office.

During early 2022, a complaint (considered vexatious) was made to Department of Environment & Science (DES) by an adjoining sawmill (which is unauthorised under local or state government legislation) regarding alleged dust and release of contaminants in stormwater associated with timber milling on the Boonenne Timbers site. This resulted in DES issuing a procedural fairness letter (reference C-CPLRC-100292915) to Boonenne Timbers requesting details on the quantity of timber milled and a description of the product produced.

IMEMS was engaged by Boonenne Timbers to respond to DES's request, to confirm that log throughput was under 5,000t per year and that hardwood timber logs were milled to produce quality construction and landscaping timbers. Consequently, DES confirmed that due to Boonenne Timbers milling logs below the minimum threshold (i.e. 5,000t per year), that DES currently has no jurisdiction over the activity.

Due to demand for the Boonenne Timbers quality product and based on projected log availability, Boonenne Timbers predict that yearly log throughput will increase to between 10,000t and 20,000t within 3 to 5 years. Therefore, Boonenne Timbers proposes to seek an EA for ERA47(b) 10,000t to 20,000t per year.

Accordingly, with proposed future increase in capacity, Boonenne Timbers requires direction from SBRC regarding the need for a Development Application (DA) for material change of use (MCU) or whether the activity is considered to have an "as of rights land use".





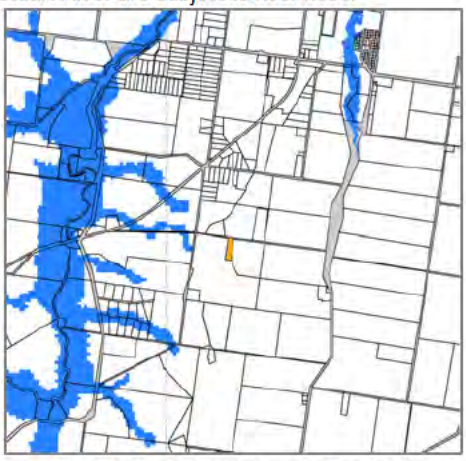
Boonenne Timbers (the site)

Diagram 1: Site location.

## 3 SITE DESCRIPTION & SETTING

**Key site details are provided in *Table 1*.**

Table 1: Site details

| Item | Comment |
|---|---|
| Street address: | 157 Boonenne Road, Goodger Qld 4610 (Refer to ***Diagram 1*** for site location) |
| Real property description | Lot 4 RP807137 |
| Area: | 3.305 ha |
| Central co-ordinates: | Lat -26.61396<br>Long 151.80959 |
| Registered owner: | Andrew Roy Keenan and Elizabeth Dianne Cooling |
| Occupancy: | Boonenne Timbers – a business owned and operated by A.R. Keenan & E.D. Cooling.<br>The onsite residential home is occupied by A.R. Keenan & E.D. Cooling |
| Local Authority | South Burnett Regional Council (SBRC) |
| Zoning | The site is zoned **Rural** (Kingaroy Shire Council – Locality & Zoning Map 1A - Version 28 July 2006). |
| Rainfall & Evaporation | Average Annual rainfall of 648 mm, lowest of 295 mm, maximum of 1079 mm[1].<br>Average daily evaporation of 4.4 mm, lowest of 2.1mm in June, highest of 6.7 mm in December (equates to an annual evaporation of 1606mm). |
| Flood potential: | SBRC flood mapping indicates the site is not impacted by flooding (refer to ***Diagram 2*** below).<br>The Stuart River is located approximately 2.5 km west of the site and the drainage lines flowing west into the Stuart River are subject to river rises.<br>  <br>Diagram 2: Excerpt from SBRC Planning Scheme *Flood Hazard Overlay* (2017) – site shown in orange. |

[1] Bureau of Meteorology Kingaroy weather station No. 040922.

| Item | Comment |
|---|---|
| Contours: | The site is flat with a gentle slope towards the south-east corner which is the lowest point on the site. To mitigate potential for movement of sediments off-site, a sediment is proposed to be constructed in the south-east corner to capture overland stormwater flows and allow for settling of any suspended solids (refer to *Section 7.5.1 Surface Waters*). Those works are planned within the next week.<br>Stormwater drainage analysis is currently being undertaken for inclusion with the EA application to DES to inform planning for stormwater management (as required by DES). |

## 4 SURROUNDING LAND USE

Surrounding land uses largely comprise intensive agriculture, grazing largely for beef cattle production, intensive animal production (piggeries and beef cattle feedlots), Duboisia cropping, local government activities (quarry, wastewater treatment plant, landfill). There is another sawmill on an adjoining land parcel, south of the site. North of the site, and closer to the township of Kingaroy, there are the airport, shooting range and a sewage treatment plant. These activities and the potential environmental impacts are referenced further in *Section 7 Environmental Objectives Assessment*.

With respect to the site activities, potential sensitive receptors are residential homes set within agricultural activities, the closest being approximately 350 m north and 360 m and 650 m north-west across Boonenne Road. There is another residential home site approximately 550 m south, however this is associated with the neighbouring sawmill, Duboisia cropping / processing and cattle grazing on former agroforestry land. There is also a residential home on the Boonenne Timbers site, occupied by the Keenans. ***Diagram 3*** shows the location of those houses in relation to the site.

Other potential sensitive receptors include the remnant vegetation west, south-west, north and east of the site. The likelihood of impact by site activities is discussed in *Section 6 Environmental Searches*.

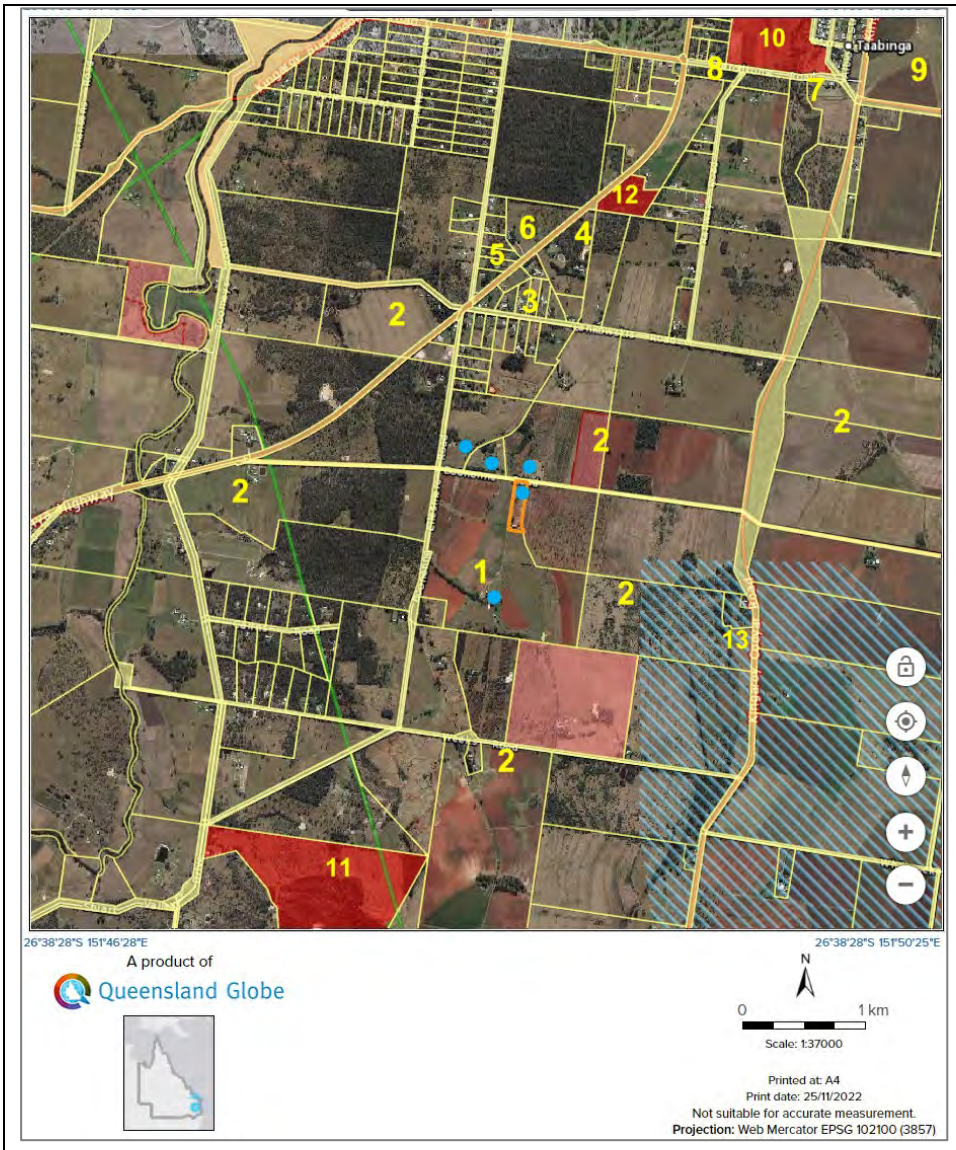



Diagram 3: Boonenne Timbers (orange outline) and surrounding land uses, with potential sensitive receptors (residential homes) marked with blue dots.

1 – Neighbouring sawmill, beef cattle grazing, cropping and Duboisia)

2 – Intensive agriculture (beef cattle, cropping and Duboisia)

3 – Motorcycle training centre

4 – High intensive piggery

5 – Stuart Valley Rural Fire Brigade

6 – WWTP (being decommissioned)

7 – Shooting Range

8 – Firewood processing facility

9 - Kingaroy Airport

10 - Department of Agriculture & Fisheries ERA63 STP

11 - SBRC – ERA16 Quarry

12 - SBRC ERA60 waste disposal

13 - TEC Coal Pty Ltd – Resource activity – mineral exploration.

## 5 DESCRIPTION OF ACTIVITY

The site plant and equipment layout shown on ***Diagram 4*** provides an overview of site activities.

In summary, sawn hardwood logs are delivered to site and cut to length in the log yard (H) and stored in stacks according to length. When required, the logs are moved by endloader to the Sawmill (L) for processing. Most Sawmill processed timber is stacked and moved to the sawn timber storage area (P). Processed timber is then trucked offsite to customers. The primary product produced by Boonenne Timbers is quality sawn hardwood structural timber for the building industry.

There is a small workshop in the Sawmill, which services and maintains mobile plant associated with the activity. Refuelling of mobile plant occurs onsite at the 1,000 L bunded aboveground storage tank (AST) (J). There is minor onsite chemical storage in the Sawmill (L). The *Hazardous Chemical Register*, shown in ***Appendix 1***, lists chemicals used on the site. All chemical storages are bunded. The onsite office (N) is used for clerical activities and sales. Employee and visitor parking, staff lunch room and ablutions are

located immediately north east of the site office. A rain water tank is located on the terrace between the office (N) and chipper (M).

The majority of waste produced by the activity is wood waste (sawdust, bark and chip). These are valuable by-products that are sold for re-use. ***Section 7.1*** *Waste* describes how wastes produced by the activity are managed.

No burning of timber, timber by-products or other wastes occurs on the site.

Staff numbers onsite are 9 full-time and 4 part-time/casual who are long-term employees and all residents of the district. There are also up to 10 contractors associated with the activity.

Site operating hours are 6am to 6pm Mondays to Saturdays with site sawmilling works usually undertaken from 6am to 2.30pm. It is only very occasionally eg urgent workorders to be completed that the mill may operate on Saturdays. Chainsaw operations are only undertaken after 7am and cease before 6pm Monday to Saturday. It is unlikely the sawmill be operating on public holidays, but if so the hours will be 6am to 3pm with no chainsaws being operated before 7am. Log deliveries and product / by-product removals by heavy vehicles will only occur between 7am and 6pm Mondays to Saturdays. Maintenance and capital works may be undertaken on Sundays, but only as an exception.

These updated operating hours reflect the Environmental Authority (EA) P-EA-100585794 issued by the Department of Environment, Science and Innovation (DESI) dated 9 September 2024 where conditioned the hours of operation are specified under Condition G1.

> *G1. Activities under this environmental authority must be conducted in accordance with the following limitations:*
>
> 1. *The amount of timber milled must not exceed 16,000 tonnes per annum, except following a natural disaster or other unprecedented weather event, or upon direction from a statutory authority (e.g. Department of Agriculture and Fisheries) where an additional 4,000 tonnes may be processed in surplus.*
> 2. *Chainsaw operations must not occur before 7am and after 6pm Mondays to Saturdays.*
> 3. *Deliveries and removals by heavy vehicles are limited between 7am and 6pm Mondays to Saturdays.*
> 4. Only maintenance works are allowed to occur on Sundays.
> 5. *Operations must occur in accordance with Appendix 1 – Site Layout Plan.*


Diagram 4: Site Infrastructure Identified (base figure Qld Globe, October 2023).

A Residence

B Shed (Associated with Residence)

C Woodchip Stockpile

D Shredded Log Yard Waste

E Firewood Stockpile

F Equipment Laydown areas

G Sawn Timber Load-out Area

H Log Yard

I Mobile Machinery Parking area

J Bunded Diesel AST

K Sawdust from Sawmill

L Sawmill (includes Workshop, Sawroom & Chainsaw Shed

M Chipper

N Site Office, Employee & Visitor Parking, Lunchroom & Toilets

O Transformer

P Sawn Timber Storage

Q Entry/Exit to Sawmill

R Entry/Exit to Residence

S Sediment Basin

# 6 STATE AND REGIONAL OVERVIEW

## 6.1 State Planning Considerations

The State Assessment and Referral Agency (SARA) seeks to deliver a coordinated, whole-of government approach to the state's assessment of development applications. The State Development Assessment Provisions (SDAP) is an outcome of the SARA and a statutory instrument made under the Act which sets out matters of interest of the state for development assessment, where the chief executive of administering the Act is the assessment manager or a referral agency. Importantly, the SDAP outlines the criteria for assessment in relation to state matters.

A review of the Department of State Development Manufacturing, Infrastructure and Planning's (DSDMIP) Development Assessment Mapping System (DAMS) reveals that the site is located within *Strategic Cropping Area* (under Areas of Regional Interest), *Water Resource Planning Area, Category X Regulated Vegetation*. In addition the site is connected via Boonenne Road to *State Controlled Road Bunya Highway* 2 km to the west and *State Controlled Kingaroy Cooyar Road* 1.6 km to the East.

As previously mentioned, Boonenne Timbers predict that yearly log processing throughput will increase to between 10,000t and 20,000t within 3 to 5 years. AS such, Boonenne Timbers will require an Environmental Authority (EA) for Environmentally Relevant Activity (ERA) 47(b) 10,000t to 20,000t per year.

# 7 ENVIRONMENTAL SEARCHES

To identify environmental values potentially impacted by the activity, environmental reports were acquired from Queensland Government Environmental Reports Online (November 2022) and Australian Government Department of Environment & Energy (November 2022) using site central coordinates. The findings are summarised in the following table together with comments regarding potential impact by the activity.

Table 2: Summary of Environmental Reports

| Environmental report | Summary | Comment |
|---|---|---|
| Matters of State Environmental Significance (MSES) [The area of interest (AOI) being within 2km radius of the site] | Map 1 – State Conservation Areas – There are no State Conservation Areas within the AOI. | MINIMAL RISK OF IMPACT BY THE ACTIVITY |
| | Map 2 – Wetlands and Waterways – There are no mapped wetlands or waterways within the AOI. | MINIMAL RISK OF IMPACT BY THE ACTIVITY |
| | Maps 3a & 3b – Species – There is wildlife habitat (endangered and vulnerable) within the AOI. There is no koala habitat mapped within the AOI. | MSES Species unlikely to be present on the site as a sawmill has operated on the site since potentially the early 1980s. There are scattered trees and shrubs on the site, including along the north boundary facing Boonenne Road. MSES Species are potentially present where MSES wildlife habitat is mapped west, north-west, south-west and north-east of the site. Nonetheless, the closest proximity of these is 500 m west of the site.<br>NO IMPACT BY THE ACTIVITY |

| Environmental report | Summary | Comment |
|---|---|---|
| | Map 4 – Regulated Vegetation – There is regulated vegetation Category B & Category C – endangered or of concern, and Category R – GBR riverine within the AOI. | Regulated vegetation not present on the site as a sawmill has operated on the site since potentially the early 1980s. Furthermore, the closest proximity of potential regulated vegetation is approximately 500 m west of the site on drainage lines draining west to the Stuart River, and mapped as *Great Barrier Reef (GBR) riverine*.<br>NO IMPACT BY THE ACTIVITY |
| | Map 5 – Offset Areas – There are no offset areas mapped within the AOI | MINIMAL RISK OF IMPACT BY THE ACTIVITY |
| Biodiversity and Conservation Values – Biodiversity Planning Assessments and Aquatic Conservation Assessments [The area of interest (AOI) being within 2km radius of the site] | Map 2 – Biodiversity Planning Assessment (BPA) – There are several Local, State and Regional BPA areas within the AOI. | Regional and State BPA areas are shown south-west, west, north and north-east of the site and Local BPA areas are shown north-east. The mapping indicates this is largely related to special biodiversity values that contain "*multiple taxa in a unique ecological and often highly biodiverse environment*". Given the wider area has been under intensive agriculture since before the 1950s, a sawmill has operated on the site since the 1980s, and there are only scattered trees and shrubs on the site, it is considered very unlikely that actual special biodiversity values will be present.<br>MINIMAL RISK OF IMPACT BY THE ACTIVITY |
| | Map 3 – Corridors – There are no Corridor Triggered Vegetation areas or Core Area Vegetation areas within the AOI. | MINIMAL RISK OF IMPACT BY THE ACTIVITY |
| | Map 4 – Wetlands and Waterways – There are areas of RE 1-50% wetland within the AOI. | Wetlands and Waterways are not present on the site, but rather associated with Category B & C Regulated Vegetation approximately 500 m west.<br>MINIMAL RISK OF IMPACT BY THE ACTIVITY |
| | Map 5 – Aquatic Conservation Assessment (ACA) – Riverine areas - The site is within a mapped ACA Riverine area of high sub-catchment significance. | There are no watercourses that intersect the site, the closest being streams approximately 250 m west and north-west, that drain west to the Stuart River. It is considered very unlikely that actual ACA Riverine areas of any sub-catchment significance will be present on the site.<br>MINIMAL RISK OF IMPACT BY THE ACTIVITY. |
| | Map 6 – Aquatic Conservation Assessment (ACA) – Nonriverine areas - There are no mapped ACA Nonriverine areas within the AOI. | MINIMAL RISK OF IMPACT BY THE ACTIVITY. |
| Regional Ecosystems Report – biodiversity status [The area of interest (AOI) being within 2km radius of the site] | Map 2 – Remnant 2019 regional ecosystems (REs) – There are several areas of mapped REs (Of Concern – Dominant, No Concern at Present and Endangered-Dominant) within the AOI. | Remnant RE vegetation is not present on the site. A sawmill has operated on the site potentially since the 1980s and there are only scattered trees and shrubs on the site. Furthermore, the closest proximity of potential remnant RE vegetation is approximately 500 m west, mapped as *Of Concern – Dominant RE 12.12.12* and approximately 250 m north and 500 m east mapped as *Endangered – Dominant RE 12.5.13a / 12.5.2b*. These mapped Remnant REs are surrounded by intensive agriculture.<br>MINIMAL RISK OF IMPACT BY THE ACTIVITY |

| Environmental report | Summary | Comment |
|---|---|---|
| | Map 4– Remnant 2019 REs by broad vegetation group (BVG) – There are several areas of mapped REs by BVG (Eucalypt woodlands to open forests and Rainforests and Scrubs) within the AOI. | Remnant RE by BVG vegetation are not present on the site. A sawmill has operated on the site potentially since the 1980s and there are only scattered trees and shrubs on the site. Furthermore, the closest proximity of potential remnant RE by BVG vegetation is 500 m west mapped as Eucalypt woodlands to open forests, and 250 m north & 500 m east mapped as Rainforests and Scrubs. These mapped REs by BVG are surrounded by intensive agriculture.<br>MINIMAL RISK OF IMPACT BY THE ACTIVITY |
| | Map 6 – Wetlands and Waterways – There are areas of mapped wetlands and waterways (RE 1-50% wetland) within the AOI. | Wetlands and Waterways are not present on the site, but rather associated with the with the remnant REs approximately 500 m west and south-west of the site.<br>MINIMAL RISK OF IMPACT BY THE ACTIVITY |
| Matters of National Environmental Significance – Protected Matters Report.<br>(search outcome applies to a buffer zone within 2 km radius of the site) | No World Heritage Properties or National Heritage Places within the buffer zone. | MINIMAL RISK OF IMPACT BY THE ACTIVITY |
| | No Ramsar Wetlands within the buffer zone. | MINIMAL RISK OF IMPACT BY THE ACTIVITY |
| | 4 x Listed Threatened Ecological Communities (LTECs) present within the area, being Lowland Rainforest of Subtropical Australia ("likely to occur"), Poplar Box Grassy Woodland on Alluvial Plains ("may occur") and White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland ("may occur"). | LTECs not present on the site as a sawmill has operated on the site potentially since the 1980s and there are only scattered trees and shrubs on the site. LTECs potentially present where regulated vegetation is mapped, particularly RE 12.12.12, which includes *Eucalyptus teriticornis, Corymbia intermedia* and/or *E. crebra* approximately 500 m west and south-west; and RE 12.5.13 *Microphyll to notophyll vine forest* located approximately 250 m north and 500 m east (see RE details above).<br>MINIMAL RISK OF IMPACT BY THE ACTIVITY |
| | 40 x Listed Threatened Species or species habitat (LTSoSH) "may occur", or are "likely to occur", or are "known to occur" in the area. | LTSoSH not present on the site as a sawmill has operated on the site since potentially since the 1980s and there are only scattered trees and shrubs on the site. LTSoSH birds, fish, insects, mammals, plants and reptiles potentially present where MSES wildlife habitat is mapped (see MSES details above). Nonetheless, the closest proximity of potential LTSoSH is 500 m west and south-west (wildlife habitat).<br>MINIMAL RISK OF IMPACT BY THE ACTIVITY |
| | 14 x Listed Migratory Species or species habitat (LMSoSH) "may occur", or are "likely to occur", or are "known to occur" in the area. | LMSoSH not present on the site as a sawmill has operated on the site since potentially since the 1980s and there are only scattered trees and shrubs on the site. LMSoSH marine birds, terrestrial species and wetland species potentially present where MSES wildlife habitat is mapped (see MSES details above). Nonetheless, the closest proximity of potential LMSoSH is 500 m west and south-west (wildlife habitat).<br>MINIMAL RISK OF IMPACT BY THE ACTIVITY |
| GeoRes Globe - Detailed Surface Geology layer (November, 2022) | Detailed surface geology mapping indicates the site and surrounding landscape is mapped as Laterite, extensive red (Krasnozem) soil development, minor ferricrete (Td/r–Qld). | Refer to ***Section 7.3*** *Land*.<br>MINIMAL RISK OF IMPACT BY THE ACTIVITY |

| Environmental report | Summary | Comment |
|---|---|---|
| Qld Globe - Areas of Regional Interest layer (November, 2022) | Land to the north, east, south and west of the site is mapped Strategic Cropping Land (SCL). | Proposed ERA is not considered to diminish the productivity of the SCLs.<br>MINIMAL RISK OF IMPACT BY THE ACTIVITY |

# 8 ENVIRONMENTAL OBJECTIVES ASSESSMENT

## 8.1 WASTE

Of note, all wood fibre containing by-products produced from the processing of hardwood logs are comprised of high-value wood fibre with well established reuse and recycling pathways. By-products and waste generated by the activity and site management practices are summarised in ***Table 4***.

Table 3: Summary of by-products and wastes produced and respective management practices.

| By-Product / Waste type | | Management |
|---|---|---|
| Hardwood timber by-product | Flitches from the Sawmill (L) and Log Yard (H) scrapings. | Stockpiled and contractor visits site to shred/grind, then deliver to landscaping industry for **reuse / recycling**. |
| | Sawdust from the Sawmill | Stockpiled beside Sawmill (L). Sawdust is collected by a contractor for **reuse / recycling** in landscaping, composting and animal husbandry industries. |
| | Bark from logs | Stockpiled at (Y) and collected weekly by a contractor for **reuse / recycling** in landscaping industry. |
| | Sawn timber dockings | Stockpiled at (E) and sold as firewood to camping and pizza oven industries. |
| Miscellaneous waste associated with timber processing | Biodegradable strapping | Taken to Kingaroy waste management facility for disposal in the appropriate **recycling** containers. |
| | Cardboard packaging | Kingaroy waste management facility for disposal in appropriate **recycling** containers. |
| | Conveyor belts | **Repurposed** onsite |
| | Chains, metal components | Scrap metal services for **recycling** |
| General crib room waste | Food scraps and packaging, tins and bottles. | **Sorted** and placed in appropriate SBRC-provided bins for kerbside collection |

| Waste type | Management |
|---|---|
| Fuels, oils, greases | The 2000 L diesel AST is within a bund. Minor quantities of oils and greases for use on fixed plant, are stored in a bund. Spill kits are strategically located and regularly audited and restocked as required.<br>Empty oil, grease and chemical containers and oily rags are taken to the Kingaroy waste management facility for disposal in the appropriate containers (including the **DrumMuster** facility). |
| | Spilt oils are cleaned up using sawdust and placed into sealed containers then taken to the Kingaroy waste management facility for disposal in the appropriate containers. |
| Wastewater | Regular collection by JJ Richards. |
| Office waste | Paper waste to Kingaroy waste facility and placed into appropriate containers for **recycling**.<br>Toner cartridges delivered to Conquer Fitness Kingaroy for **recycling**. |

Any by-products and waste generated, transported, or received as part of carrying out the activity will be managed in a way that protects all environmental values. This environmental objective will be achieved by meeting the relevant performance outcomes as detailed below:

| Performance Outcome | Applicant Response |
|---|---|
| (a) Waste generated, transported, or received, is managed in accordance with the waste and resource management hierarchy in the *Waste Reduction and Recycling Act 2011*; and | Boonenne Timbers will *avoid unnecessary resource consumption* through responsible sourcing of raw materials.<br>Boonenne Timbers will *reduce waste generation and disposal* through minimisation of non-recyclable wrapping materials used in the dispatch of timber packs.<br>Boonenne Timbers *reuse waste resources without further manufacturing* through on-sale of timber offcuts / bark / sawdust to the landscaping, composting and animal husbandry industries.<br>Boonenne Timbers *recycle waste resources to make the same or different products* e.g. empty chemical containers are deposited at the DrumMuster facility in the Kingaroy waste management facility.<br>Boonenne Timbers will continue to investigate opportunities to *recover waste resources.*<br>Boonenne Timbers will continue to investigate opportunities to *treat waste before disposal, including reducing the hazardous nature of waste.*<br>Boonenne Timbers *dispose of waste only if there is no viable alternative*. Materials that are currently assigned for disposal include general waste. |
| (b) If waste is disposed of, it is disposed of in a way that prevents or minimises adverse effects on environmental values. | Wastes taken to the Kingaroy waste management facility are sorted and placed into the appropriate containers. |

## 8.2 AIR

Air emissions associated with the activity are limited but potentially may arise from the following unit operations:

- Sawmill equipment;
- Chipper (M);
- Mobile plant (exhaust emissions);
- Vehicle movements (dust).

The Kingaroy Airport (BOM Station No. 40922), located ~3.7 km north-east of the site, indicates a 9 am annual average wind speed of 13.2 km/h (predominantly from the south-east) and a 3 pm annual average wind speed of 15.6 km/h (predominantly from the south-east and east).

The closest residential sensitive receptors are: (a) the residential home on the Boonenne Timbers site (occupied by the Keenans); (b) residential homes (on agricultural lands) across Boonenne Road, approximately 350 m north and 360 m and 650 m north-west. Based on Kingaroy Airport climate data, the houses to the north-west are potentially impacted by site activities, however no complaints have been received from the occupiers.

The activity will be operated in a way that protects the environmental values of air. This environmental objective will be achieved by meeting the relevant performance outcomes as detailed below:

| Performance Outcome | Applicant Response |
|---|---|
| (a) Fugitive emissions of contaminants from storage, handling and processing of materials and transporting materials within the site are prevented or minimised; and | Delivery / dispatch trucks will be managed to ensure no unnecessary idling whilst stationary.<br>Mobile plant speeds restricted to 10kph to minimise dust generation.<br>Monitoring of wind conditions and ensuring trafficable areas are watered as required via operation of dedicated mobile water cart with capacity of 20,000 L.<br>High wind conditions result in cessation of onsite works (WHS issues in timber milling process), minimising onsite vehicle movements and watering the ground surface.<br>Setting up material unloading as close as possible to final storage areas.<br>Mist sprays on cutting saws in Sawmill (reduces dust emissions.<br>Consideration of program for planting dust trapping endemic vegetation (e.g. *Casuarina* spp and *Allocasuarina* spp.) along priority boundaries of the site, up-wind and down-wind of operations deemed as higher risk of generating dust.<br>Maintenance of chipper silo to capture the majority of fugitive dust from conveyor outfeeds – noting that the sawmill processes green logs, therefore emission of suspended particles from chipper is negligible.<br>Regular maintenance of sawdust extraction, conveying and blower pipe infrastructure to ensure proper function.<br>Minimising the volume of sawdust and shavings stored onsite by weekly collection by contractor for reuse in landscaping, composting and animal husbandry industries.<br>Implementation of WHS management system to manage and minimise likelihood of air impacts to staff and visitors. |
| (b) Contingency measures will prevent or minimise adverse effects on the environment from unplanned emissions and shut down and start up emissions of contaminants to air; and | The only foreseeable unplanned emissions associated with the activity include residual sawdust that is not collected by the dust extraction and collection system. Contingency measures in place include maintaining a clean and tidy site, and maintaining / repairing sawdust extraction, conveying and blower pipe infrastructure to ensure proper function.<br>As an additional contingency measure, Boonenne Timbers will implement their Environmental Policy, which includes a commitment to respond to and correct any public concerns or complaints regarding air emissions. |
| (c) Releases of contaminants to the atmosphere for dispersion will be managed to prevent or minimise adverse effects on environmental values. | Exhaust emissions released to the atmosphere will be minimised via management of unnecessary idling of trucks. Dust is managed by limiting speed of mobile plant and trucks to 10kph and watering trafficable areas.<br>During high wind conditions, watering of trafficable areas is increased.<br>Sawdust extraction, conveying and blower pipe infrastructure is monitored and maintained to ensure proper function. |

Based on the above, air emissions from the proposed activity are anticipated to have minimal adverse effect on (1) human health and wellbeing; (2) health and biodiversity of ecosystems; (3) agriculture; and (3) environmental aesthetics.

Of note: Boonenne Timbers operates in a rural environment transected by gravel (unpaved) roads, with widespread agricultural, horticultural, intensive animal operations, grazing activities and neighbouring sawmill.

## 8.3 LAND

The sawmill has operated on the site potentially since the 1980s. The Keenans have owned and operated Boonenne Timbers since 1997. The activity does not involve any ongoing land disturbance nor any potential release of contaminants to land.

Hardwood timber by-products are stockpiled onsite for the minimum timeframe, e.g. sawdust, bark and chip is stockpiled and collected weekly by a contractor, and dockings for use as firewood are stockpiled and collected weekly by a contractor.

Minor quantities (<100 L) of chemicals including oil and grease, are stored in appropriately bunded areas.

Dedicated spill kits are established at the chemical storages. These are checked and maintained regularly.

Sewage is collected weekly by JJ Richards. Accordingly, no wastewater is disposed of to land on the site.

The activity will be operated in a way that protects the environmental values of land including soils, subsoils, landforms and associated flora and fauna. This environmental objective will be achieved by meeting the relevant performance outcome as detailed below:

| Performance Outcome | Applicant Response |
|---|---|
| There is no actual or potential disturbance or adverse effect to the environmental values of land as part of carrying out the activity. | It is not expected that any new buildings will be constructed or equipment brought on to the site, other than to replace equipment for work health & safety (WHS) reasons, efficiency or age reasons. Boonenne Timbers will continue to operate their business as they have currently been doing.<br>Minor quantities of chemicals are stored in appropriate containers in bunds. The diesel AST is located within a bund.<br>Dedicated spill kits are established at the chemical storages and are checked / maintained regularly, and after deployment.<br>No wastewater is disposed of to land on the site.<br>Daily refuelling of mobile plant is undertaken onsite following standard procedures (e.g. fuel transfers are supervised). |

## 8.4 NOISE

Noise emissions associated with the activity may arise from the following activities on site:

- Sawmill: circular saws; dust extraction; woodchipper; twin log edger; docking saw.
- Truck, endloader and forklift movements;
- Chainsaws; and
- Air brakes on delivery / dispatch trucks.

The closest residential sensitive receptors are those north and north-west, directly across Boonenne Road, and to date no complaints have been received from the occupiers of those houses.

Based on the above, noise environmental values at the site include the qualities of the acoustic environment that are conducive to protecting:

- Human health and wellbeing (including by ensuring a suitable acoustic environment for individuals to sleep; study or learn; or be involved in recreation, including relaxation and conversation); and
- Amenity of the community.

Noise environmental values at the site also include the health and biodiversity of ecosystems, albeit to a lesser extent (refer to ***Section 6 Environmental Searches***) to those described above due to the greatly disturbed nature of the surrounding lands which have been extensively developed for agriculture and grazing.

The site is set within an area of intensive agriculture. Machinery for ploughing, tilling and harvesting crops, plus trucks and semi-trailers that service the surrounding farms, traverse the local roads and Bunya Highway. The Goodger-Cooyar Road (1.5 km to the east) is the main access for Tarong Power Station and coal mine workers from Kingaroy. Both roads are B double rated, contributing to ambient noise. In addition, the neighbouring sawmill (south-west of the site) operates plant and equipment with minimal noise mitigation (eg no mufflers on mobile plant). That neighbouring site operation on lands west, south and east of Boonenne Timbers also includes:

- Intensive farming of *Duboisa myoporoides*[2] including mechanical harvesting, a gas-operated Duboisia drying plant and heavy vehicle transport of Duboisa products that also contribute substantially to ambient noise.
- Cattle grazing with associated transport of cattle on and offsite.

Importantly, with the exception of truck movements to and from the site, the majority of activities that have the potential to generate noise emissions are largely undertaken within the confines of the Sawmill building. Point source emitting equipment such as. twin log edger, power fed bench, docking saw, dust extraction, chipper, loader, forklifts, chainsaws are modern, relatively new equipment with noise attenuation as supplied from original equipment suppliers. All equipment on site is regularly checked and maintained. Chainsaws and the on site loader are also no more than four (4) years old.

Primary noise mitigation measures include:

- Limiting sawmilling operating hours from 6a.m. to 6 p.m. Monday to Saturday with Friday works generally 6am to 12pm and Saturday works generally limited to maintenance;
- Installation of broadband reversing alarms on forklifts and loaders rather than traditional tonal alarms (these are less intrusive to surrounding properties whilst still maintaining a safe work environment);

[2] *Duboisa myoporoides* is a native shrub / tree whose leaves contain alkaloids used extensively in pharmaceutical products.

- Installation of fixed guarding on milling equipment (the primary WH&S focus being to reduce laceration risks, but with the added benefit of reducing noise hazards);
- Maintaining plant and equipment on a regular basis; and
- Implementation of Boonenne Timbers' Environmental Policy Statement (refer to ***Appendix 3***) which includes a commitment to respond to and correct any public concerns or complaints regarding noise emissions.

The activity will be operated in a way that protects the environmental values of the acoustic environment. This environmental objective will be achieved by meeting the relevant performance outcomes as detailed below:

| Performance Outcome | Applicant Response |
|---|---|
| (a) Sound from the activity is not audible at a sensitive receptor, or | The nearest sensitive receptors are residential homes north and north-west across Boonenne Road however no complaints have been received from these occupiers. In addition, the intensive agricultural activities in the surrounding district contribute to ambient noise.<br>The majority of noise emitting activities are within walled and roofed buildings, with noise (and safety) attenuating covers installed. |
| (b) The release of sound to the environment from the activity is managed so that adverse effects on environmental values, including health and wellbeing and sensitive ecosystems, are prevented or minimised. | Despite it being likely that performance outcome (a) will not be met, the following mitigating measures will ensure that adverse effects on noise environmental values are prevented or minimised.<br>Limiting sawmill operating hours from 6am to 6 pm Monday to Saturday. The sawmill may operate 7am to 12 pm on Saturdays as required. Maintenance and cleaning operations may continue to 6pm daily Monday to Saturday. The use of chainsaws on site will be limited to the hours 7am to 6pm ie chainsaws will not be used during night time or early morning (6am to 7am).<br>Maintaining fixed guards around milling equipment.<br>Maintaining mobile plant and fixed plant and equipment on a regular basis, including saw blades. Selecting quietest available mobile and fixed plant and equipment when seeking to replace such equipment.<br>Installation of broadband reversing alarms on forklifts and loaders.<br>Installation of acoustic screen in a form of industrial PVC – Strip curtains such as Flexishield or similar for the openings (end of the conveyor belt course) on the eastern façade of the shredder shed to prevent noise impact on the nearest noise sensitive places. The acoustic screens (curtains) are be minimum 4mm thick and with 100 to 120mm overlaps. The weighted sound reduction index should be minimum Rw 18. Examples of the acoustic screens (curtains) are presented in Appendix G of ATP Consulting Engineers (2023 – **Appendix 3**).<br>Implementation of Boonenne Timbers' Environmental Policy which includes a commitment to respond to and correct any public concerns or complaints regarding noise emissions and maintaining commitment to operating the site as quietly as possible.<br>Implementation of mitigation measures recommended by ATP Consulting Engineers, August 2023 and January 2025 (see below & **Appendix 3**). |

A noise impact assessment (NIA) report was prepared by ATP Consulting Engineers (2023 -Refer **Appendix 3)**. Background noise monitoring was undertaken in from 21 June to 1 July 2023 using an automated noise logger deployed at the subject site to record the background noise levels representative of the noise amenity at the nearest noise sensitive places. ATP undertook this survey in accordance with the *AS1055.1-3 - Acoustics – Description and Measurement of Environmental Noise* and the *Environmental Protection Act 1994* and the modelling of noise emissions has been carried out as per *International Standard ISO 9613*. ATP stated that Provided the recommendations of this report are fully implemented,

there are no further acoustic constraints on the operation of the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger.

ATP Consulting Engineers (2025 - Refer **Appendix 3),** reviewed the previous 2023 reporting to assess the increase in hours of operation of the development to align with the approved hours of operation as per Condition G1 of the existing environmental authority (EA). The ATP Consulting Engineers (2025 - Refer **Appendix 3**) concluded that:

> *Provided the recommendations of this report are fully implemented, there are no further acoustic constraints on the increase of the hours of operation of the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger.*

Based on the above, it is considered that the acoustic quality objectives prescribed in Schedule 1 of the *Environmental Protection (Noise) Policy 2019* will be met and that noise emissions from the proposed activity will have minimal risk of impact on (1) human health and wellbeing; (2) amenity of the community; and (3) health and biodiversity of ecosystems.

## 8.5 WATER

Environmental values applicable to the site are those for the Stuart River upstream of Gordonbrook Dam (BMRG, Undated) being:

- Aquatic ecosystems;
- Irrigation / farm supply and use / stock watering;
- Human consumer / water supply;
- Secondary recreation;
- Visual recreation;
- Drinking water.

The proposed activity does not involve any actual or potential discharges to surface waters, groundwaters or wetlands therefore the activity has no impact on the water environmental values.

### 8.5.1 Surface Waters

The site is serviced by rainwater tanks and septic tanks. Potable water is trucked to the site as required. Surface waters are not present on the site. The site is flat with an imperceptible slope towards the south-east. Planning is underway for construction of a sediment basin at the lowest elevation on the site in the south eastern corner. Stormwater flows on the site are generally in a south-east direction. The north portion of the site is predominantly grassed, which acts to slow stormwater flows and trap sediments. There is a low bund along the east boundary which directs stormwater to the sediment basin. Along the south boundary, there is a 1 m high grassed earthen bund, which also directs stormwater to the sediment basin. The basaltic derived Krasnozem soils characteristic of the site and surrounding landscape are considered non sodic and non-dispersive (Sorby & Reid 2001), thus presenting a low risk of sheet erosion providing other erosion risks are managed appropriately. ***Diagram 5*** shows inferred stormwater flow direction on the site.


Diagram 5: Indicative stormwater flow paths on the site (purple line on east and south boundaries depicts earth / chip bund, blue circle represents a sediment basin (base figure Qld Globe, November 2022).

In the wider landscape, there are scattered farm dams on drainage lines west, north-west and south-west of the site. These drainage lines flow into the Stuart River, approximately 3 km west of the site. Kingaroy Creek is approximately 1.8 km east of the site and flows in a general north direction to join the Stuart River. ***Diagram 6*** shows drainage features and surface water bodies in relation to the site.


Diagram 6: Drainage features in relation to the site.

The activity will be operated in a way that protects environmental values of waters. This environmental objective will be achieved by meeting the relevant performance outcomes as detailed below:

| Performance Outcome | Applicant Response |
|---|---|
| There is no actual or potential discharge to waters of contaminants that may cause an adverse effect on an environmental value from the operation of the activity. | There are no actual or potential discharges to waters associated with the activity.<br>There are no onsite surface water impoundments, and no wastewater is disposed on the site or to waters adjacent to the site.<br>The low earth/chip bund on the east boundary and the grassed earthen bund on the south boundary stops stormwater leaving site and directs overland flow to the stormwater sediment basin. |
| (a) The storage and handling of contaminants will include effective means of secondary containment to prevent or minimise releases to the environment from spillage or leaks. | Minor quantities of chemicals are stored in appropriate containers within a bund inside the Sawmill. The diesel AST is also bunded and procedures are in place for the fuel receival and dispensing. |

| Performance Outcome | Applicant Response |
|---|---|
| | Dedicated spill kits are established at the chemical storages and are checked / maintained on a monthly basis.<br>Timber by-product is stockpiled away from drainage lines. |
| (b) Contingency measures will prevent or minimise adverse effects on the environment due to unplanned releases or discharges of contaminants to water. | Spill kits are deployed in the event of chemical spills.<br>Procedures are in place to ensure that debris and liquid spills are cleaned from all ground surfaces, minimising potential for entrainment of solids and other contaminants in stormwater.<br>Fuel transfers are always supervised by operator. |
| (c) The activity will be managed so that stormwater contaminated by the activity that may cause an adverse effect on an environmental value will not leave the site without prior treatment. | Ensuring stormwater potentially contaminated by the activity does not leave the site without prior treatment (i.e. a sediment basin has been constructed in the south-east corner of the site and bunds along the east and south boundaries direct stormwater to the sediment basin.<br>There is planning for expansion of the sediment basin to capture additional water for site dust suppression along with installation of tanks for collection of rainwater from site buildings. Preliminary Modelling suggests that .....<br>In addition, a system for capture of first flush and then diversion offsite of heavy rainfall during intense rain events is also being considered (as discussed with Daniel Spelchan).<br>Nonetheless, stormwater ultimately flows from the site in an easterly direction across contoured heavily grazed and cropped land on the adjacent property over a distance of ~500 m before entering a large farm dam.<br>Ensuring any stormwater discharge is managed so that there will be no adverse effects due to the altering of existing flow regimes.<br>Timber by-product is stockpiled away from drainage lines.<br>Fuel transfers are always supervised by operator. |
| (d) The disturbance of any acid sulfate soil, or potential acid sulfate soil, will be managed to prevent or minimise adverse effects on environmental values. | Mapping indicates there are no acid sulfate soils or potential acid sulfate soils on the site or surrounding area. |
| (e) Acid producing rock will be managed to ensure that the production and release of acidic waste is prevented or minimised, including impacts during operation and after the environmental authority has been surrendered. | There will be no disturbance or handling of acid producing rock since this is NOT associated with the activity. |
| (f) Any discharge to water or a watercourse or wetland will be managed so that there will be no adverse effects due to the altering of existing flow regimes for water or a watercourse or wetland. | There are no actual or potential point source / diffuse discharges to waters associated with the activity. |
| (g) For a petroleum activity, the activity will be managed in a way that is consistent with the coal seam gas water management policy, including the prioritisation hierarchy for managing and using coal seam gas water and the prioritisation hierarchy for managing saline waste. | The proposed activity is not a petroleum activity. |
| (h) The activity will be managed so that adverse effects on environmental values are prevented or minimised. | The responses above confirm that the activity will be undertaken in a manner that will largely prevent adverse effects on water environmental values. Where prevention is not able to be achieved, management measures will ensure that adverse effects on water environmental values will be minimised. |

### 8.5.2 Wetlands

Wetlands are not present on the site, nor within a distance considered likely to receive runoff from the site. There are RE 1-50% wetlands mapped in association with the drainage lines north-west, west and south-west of the site. The closest potential wetland is the Stuart River, approximately 3 km west of the site. This wetland is within a totally different catchment (west of a ridge line) to Boonenne sawmill.

The activity will be operated in a way that protects the environmental values of wetlands. This environmental objective will be achieved by meeting the relevant performance outcomes as detailed below and noting that the applicant responses provided for performance outcomes associated with surface waters (***Section 7.5.1***) are also relevant in the context of protection of wetlands:

| Performance Outcome | Applicant Response |
|---|---|
| (a) There will be no potential or actual adverse effect on a wetland as part of carrying out the activity. | There are no actual or potential discharges to wetlands associated with the activity. Accordingly, there will be no adverse effect on wetlands. |
| (b) The activity will be managed in a way that prevents or minimises adverse effects on wetlands. | The proposed activity will be undertaken in a manner that will prevent adverse effects on wetlands. |

### 8.5.3 Groundwater

A groundwater bore was installed on the site during 2012 for water supply at the property residence to a depth of 179m where the water table was intersected. Beyond the site, the closest registered groundwater bore is approximately 1.1 km north-west. The bore reports for the onsite house bore and bores within 1.8km radius were reviewed to determine stratigraphy and potential depth to groundwater bearing strata. The details are summarised in ***Table 7***. ***Diagram 7*** shows the location of reviewed groundwater bore reports.

The shallowest aquifer is approximately -12m below ground level (bgl)[3], as described in RN13630020. Regional groundwater quality appears to be vary from moderately saline to very saline, and while the bore water is noted for water supply, likely use is for irrigation of crops or livestock watering. Stratigraphies are generally red soils overlaying clay layers then granite.

Table 4: Summary stratigraphy and depth to groundwater (State of Qld, 2022).

| Bore reference / location | | Use / water quality | SWL (m) | Formation / Aquifer depth (m) | Stratigraphy |
|---|---|---|---|---|---|
| RN156392<br>Onsite bore at residence<br>(drilled in 2012) | | Water supply<br><br>EC<br>1500 µS/cm | 0.31 m | Boondooma Igneous Complex<br>179 m | 0.00 1.50 red soil<br>1.50 4.00 red clay<br>4.00 9.00 light pink clay<br>9.00 25.00 yellow / white clay sandy<br>25.00 63.00 soft weathered granite<br>63.00 84.00 firm to hard granite<br>84.00 179.00 hard granite black and white<br>179.00 200.00 soft granite |
| RN167858<br>1.1 km north-west<br><br>(drilled in 2014) | | Water supply<br><br>Not specified | 27 m | Elliott Formation<br>33 m | 0.00 3.00 red soil<br>3.00 5.00 clay<br>5.00 19.00 weathered basalt<br>19.00 26.00 white clay<br>26.00 33.00 yellow weathered sandstone<br>33.00 48.00 quartz sandstone |

[3] There was no indication as to whether these measurements were below ground level (bgl) or Australian Height Datum (AHD), however bgl is considered the more likely measurement.

| Bore reference / location | | Use / water quality | SWL (m) | Formation / Aquifer depth (m) | Stratigraphy |
|---|---|---|---|---|---|
| RN13630020<br>1.8 km south-west<br><br>(drilled 2005) | | Natural Resources monitoring bore<br><br>EC 13,500 µS/cm<br>pH 6.2<br>(in 2006) | Ranging from 0.8 m to 3.04 m during the period 2005 to 2021 | Boondooma Igneous Complex<br><br>12-24.2 m | 0.00 1.00 grey brown clay, brown mottling<br>1.00 2.00 grey brown clay, red brown mottling<br>2.00 4.00 red brown silty latertic clay<br>4.00 5.00 dark red brown lateritic clay<br>5.00 7.00 dark red brown sandy lateritic clay<br>7.00 8.00 red brown clayey vf-f sand<br>8.00 9.00 pale grey clayey vf-f sand, red brown mottling<br>9.00 11.00 pale brown clayey c-vc sand & gravel, polymictic<br>11.00 24.20 hornblende-biotite granite, fractured heavily weathered; water from 12.0m |
| RN167988<br>1.8km west-south-west<br><br>(drilled 2016) | | Water supply (irrigation)<br><br>EC 1500 µS/cm | 4 m | Boondooma Igneous Complex<br><br>22 m | 0.00 8.00 brown clay<br>8.00 9.00 blue clay sticky damp<br>9.00 12.00 decomposing granite<br>12.00 22.00 hard granite<br>22.00 24.00 decomposing granite<br>24.00 25.00 hard granite |


**Diagram 7: Existing registered groundwater bores with aquifer details within 1.8km of the site (Qld Globe, November 2022) [site boundary indicated by orange outline]**

Based on the reviewed bore reports, there is a very low likelihood of shallow water-bearing strata being present at or in near vicinity of the activity. In addition, the activity is unlikely to impact on groundwater due to:

- No pathway to link potential source of contaminants to groundwater aquifers or groundwater recharge areas given depth through basalt to groundwater bearing strata;
- Groundwater is not accessed for use at the sawmill operation;
- There being no large-scale onsite chemical storages;
- The minor chemical storages that are on site are managed such to minimise risk of spills to ground, and in the event of spills to ground clean-up procedures are implemented immediately;
- The appropriate storage and handling of potential contaminants to prevent or minimise releases to the environment from spills or leaks; and
- The stratigraphy overlaying the aquifer consisting of relatively impermeable materials (i.e. clay).

The activity will be operated in a way that protects the environmental values of groundwater and any associated surface ecological systems. This environmental objective will be achieved by meeting the relevant performance outcomes as detailed below and noting that applicant responses provided for performance outcomes associated with surface waters (***Section 7.5.1***) are also relevant in the context of protection of groundwater and any associated surface ecological systems.:

| Performance Outcome | Applicant Response |
|---|---|
| (a) There will be no direct or indirect release of contaminants to groundwater from the operation of the activity. | There will be no direct or indirect release of contaminants to groundwater associated with the activity. |
| (b) There will be no actual or potential adverse effect on groundwater from the operation of the activity. | There will be no releases to groundwater associated with the activity. Accordingly, there will be no actual or potential adverse effects on groundwater. |

## 8.6 TRAFFIC AND ACCESS

Site access is via Boonenne Road. Log trucks enter and exit via the western site access. Light vehicles and small trucks use the eastern access for the onsite residence.

Currently, there are approximately 1 x 62T (gross) B-double and 1 x 45.5T (gross) single semitrailer entering and leaving the site each day via the Bunya Highway which is approved for B-Doubles up to 25m in length. Kingaroy – Cooyar Road may be used occasionally, but only for smaller trucks. Movements by mobile plant are restricted to the southern portion of the site.

The activity is judged to not materially impact traffic movements in the region, given the Bunya Highway and Goodger-Cooyar Road is already carrying heavy vehicles associated with agricultural and grazing activities, power station and mine.

A State Assessment and Referral Agency (SARA) information request (IR) notice (**Appendix 5**) included a request for additional information regarding traffic matters. This IR was answered by IMEMS on behalf of Boonenne Timbers in May 2024 (**Appendix 5**).

A subsequent request by Council for additional information regarding traffic was answered by PSA Consulting in December 2024 (**Appendix 5**).

## 9 SITE REHABILITATION / REMEDIATION

Upon cessation of the proposed activity, disturbed areas will be rehabilitated or restored to achieve a site that is:

i) Safe to humans and wildlife;
ii) Non-polluting;
iii) Stable; and
iv) Able to sustain an appropriate land use after rehabilitation or restoration.

To achieve this, Boonenne Timbers will, where necessary:

i) Remove all waste material from the site;
ii) Remediate any contaminated land;
iii) Reshape and re-profile significantly disturbed land to a stable landform;
iv) Undertake weed management; and
v) Establish groundcover in accordance with the surrounding landscape to ensure that erosion is minimised.

Regardless of the above commitments, it should be noted that Boonenne Timbers sawmill is considered a viable business having been operating since 1997 on the site and ongoing well into the foreseeable future. Furthermore, even when timber milling operations cease it is likely that future uses will utilise existing improvements such as buildings and access tracks for ongoing commercial / industrial or agricultural purposes. The proposed activity is also considered to involve minimal disturbance and/or risk of contamination of the site, especially when compared to resource activities or higher risk prescribed ERAs. Accordingly, no specific rehabilitation conditions are considered necessary. Instead, should Boonenne Timbers wish to surrender the EA at a later date, a statement of compliance with all conditions of the EA would accompany a surrender application, providing an opportunity to address any rehabilitation / remediation concerns at that point.

## 10 CONCLUSIONS

Boonenne Timbers is making an application for an EA for prescribed ***ERA 47(b) Timber milling and woodchipping >10,000t to 20,000t per annum***.

This supporting document describes the site setting and proposed activities, identifies the environmental values potentially impacted by the activity, evaluates potential impacts of the activity on environmental values, and details strategies to manage potential impacts on environmental values.

Overall, it is considered that all relevant environmental objectives will be achieved by meeting the performance outcomes for waste, air, land, noise, and water.

Boonenne Timbers is striving to ensure compliance with Local and State Government requirements and therefore respectfully requests SBRC to provide direction for the need for a DA or otherwise, in order to inform the proposed application for EA as described above.

## 11 REFERENCES

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# APPENDICES

Appendix 1: Boonenne Timbers Hazardous Chemicals Register.

Appendix 2: Environmental Policy Statement.

Appendix 3: Noise Impact Assessment Reports (ATP Consulting Engineers, August 2023 & January 2025 Update).

Appendix 4: Boonenne Timbers DRAFT Environmental Issues Register

Appendix 5: State Assessment and Referral Agency (SARA) *Information Request* (IR) notice (6 February 2024). Response to SARA IR (IMEMS May 2024). PSA Consulting *Traffic Engineering Response* December 2024.

Appendix 1: Boonenne Timbers Hazardous Chemicals Register.

# Hazardous Chemical Register

**Workplace Location:** Boonenne Timbers 157 Boonenne Rd KINGAROY Q 4610
**Department Name:** MAINTENANCE

**Date Last Reviewed:** 28.04.2022
**Contact Person:** Andrew Keenan

| TABLE OF CONTENTS No. | Chemical Name | Max. Quantity L or kg | Safety Data Sheet (Less than 5yrs old) | Storage Location | Controls in Place / Comments |
|---|---|---|---|---|---|
| 1 | Signet DO Ink - White | 20L | 1.11.2019 | Workshop Cupboard | |
| 2 | WD - 40 | 4L | 18.09.2019 | Workshop Cupboard | |
| 3 | Log End Sealer | 20L x 2 | 27.10.2019 | Bunded Area - Back of Sawshop | |
| 4 | AC-40 Concentrated Truck Wash | 20L | 30.08.2021 | Bunded Area - Back of Sawshop | |
| 5 | Tranzmile 85W-140 Transmission Oil | 20L x 2 | 15.01.2018 | Bunded Area - Back of Sawshop | |
| 6 | Tranzmile Hyspin Hydraulic Oil 68 | 20L | 05.07.2018 | Bunded Area - Back of Sawshop | |
| 7 | Tranzfleet 15W-40 Engine Oil | 20L | 31.12.2018 | Bunded Area - Back of Sawshop | |
| 8 | Multi Pupose Degreaser | 20L | 05.07.2018 | Bunded Area - Back of Sawshop | |
| 9 | Dy-Mark Spray Paint | 350g x 12 | 01.11.2019 | Chainsaw Shed | |
| 10 | Anti Seize | 450g | 4.2022 | Workshop Cupboard | |
| 11 | Houghto - Grind 50 | 20L | 21.09.2019 | Saw Shop | |
| 12 | Unleaded 91 Petrol | 20L | 26.05.2021 | Chainsaw Shed | |
| 13 | Diesel | 1000L | 08.06.2019 | Bunded Tank - Machinery Bay | |
| 14 | Stihl 2 Stroke Oil | 5L | 29.08.2018 | Chainsaw Shed | |
| 15 | Valvoline General Purpose Grease | 450g x 12 | 08.01.2019 | Workshop Cupboard | |
| 16 | Chain and Bar Oil | 20L | 19.03.2020 | Chainsaw Shed | |

Appendix 2: Environmental Policy Statement.

# BOONENNE TIMBERS

## ENVIRONMENTAL POLICY STATEMENT

Boonenne Timbers understands that operating our business can potentially have an impact on the environment and the local community. It is therefore our primary aim to ensure our operations are undertaken in a way that places environmental values at the centre of the business.

We will manage our business so that we minimise the impact on the environment and are committed to:

- Supporting the principles of sustainable development;
- Providing training and encouragement of our workers to achieve and maintain sound environmental practices;
- Minimise impact to air, noise, water and land;
- Maintaining our operations in accordance with the laws, legislation and regulations relating to the environment;
- Require subcontractors to operate in an environmentally responsible manner and adhere to our site's values.

Andrew Keenan

Boonenne Timbers.

Appendix 3: Noise Impact Assessment Reports (ATP Consulting Engineers, August 2023 & January 2025 Update).

# Noise Impact Assessment

# Boonenne Timbers

## 157 Boonenne Road, Goodger

IMEMS Pty Ltd

Project No.: ATP230421

Project Name: Boonenne Timbers

Document No.: ATP230421-R-NIA-01

August 2023

# Document Control Record

| | |
|---|---|
| Prepared by: | Felix Gau Rinaldi |
| Position: | Engineer – Acoustics |
| Signed: |  |
| Date: | 18 August 2023 |

| | |
|---|---|
| Approved by: | Sasho Temelkoski<br>RPEQ 13551 |
| Position: | Managing Director |
| Signed: |  |
| Date: | 18 August 2023 |

REVISION STATUS

| Revision No. | Description of Revision | Date | Approved |
|---|---|---|---|
| 0 | Issue 1 | 18 August 2023 | S. Temelkoski |

Recipients are responsible for eliminating all superseded documents in their possession.


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# Executive Summary

ATP Consulting Engineers (ATP) was engaged to prepare a noise impact assessment (NIA) report for the approved development for timber milling and woodchipping facility at 157 Boonenne Road in Goodger.

Approval is being sought from the Department of Environment and Science for the following Environmentally Relevant Activities (ERA's):

- **ERA 47 –** *Timber milling and shredder (b) 10,000t to 20,000t per year.*

The Boonenne Timbers sawmill operation currently mills less than 5,000t per year and is proposing to increase over time to over 10,000t but less than 20,000t per year.

The existing sawmill operational footprint will remain the same with upgrades being made over time to the individual sawmilling unit operations to facilitate the increase in capacity. It should be noted that the proposed upgrades of the facility will not increase the maximum noise levels, it will simply extend the duration of noise emissions to all days permitted operation.

The purpose of this report is to assess the potential noise impacts from the proposed increase in capacity of the development on the nearest noise sensitive places in accordance with the South Burnett Regional Council *Planning Scheme 2017* and the *Environmental Protection (Noise) Policy 2019*.

Background noise monitoring was carried out between 21 June to 1 July 2023 using an automated noise logger deployed at the subject site to record the background noise levels representative of the noise amenity at the nearest noise sensitive places.

The noise measurements have been carried out in accordance with the *AS1055.1-3 - Acoustics – Description and Measurement of Environmental Noise* and the *Environmental Protection Act 1994* and the modelling of noise emissions has been carried out as per International Standard ISO 9613.

The relevant noise criteria from the *Environmental Protection (Noise) Policy 2019* and the relevant general development provisions in accordance with the South Burnett Regional Council *Planning Scheme 2017* were considered in this assessment. Detailed noise propagation modelling was carried out considering all potential noise emissions from the operation of the timber milling and woodchipping facility at 157 Boonenne Road in Goodger. to determine the potential noise impact on the nearest noise sensitive places.

The noise sources and operational scenarios included in this report have been considered based on the scale and intensity of the operations at the existing timber milling and woodchipping facility, because no changes are expected to the noise sources at 157 Boonenne Road in Goodger. The dominant noise sources are located at the covered work area, and these include noise from the circular saw and shredder. Other noise sources include delivery and dispatch of materials (truck movements), forklifts and staff and visitor parking.

The relevant noise criteria from the *Environmental Protection (Noise) Policy 2019* and the relevant general development provisions in accordance with the *South Burnett Regional Council Planning Scheme* were considered in this assessment.

The nearest noise sensitive residential receptors to the site are the low-set dwellings along Boonenne Road. However, it is to be noted that some of the dwellings are mostly used in association with rural activities or for commercial operations, rather than as Dwellings.

The results of the conservative noise propagation modelling indicate that there will be no noise impacts on the nearest noise sensitive land uses, mainly because the most dominant noise sources are located at the covered area, which is at the back of the development, approximately 330 metres from Boonenne Road and approximately 450 metres from the nearest noise sensitive use at 156 Boonenne Road.

**Noise Mitigation Measures**

To ensure ongoing compliance with the noise criteria at the nearest noise sensitive receptors, the following mitigation measures are recommended for the proposed increase in capacity of the existing development:

- Acoustic screen in a form of industrial PVC – Strip curtains such as *Flexishield* or similar are required for the openings (end of the conveyor belt course) on the eastern façade of the shredder shed to prevent noise impact on the nearest noise sensitive places.
- The acoustic screens (curtains) should be minimum 4mm thick and with 100 to 120mm overlaps. The weighted sound reduction index should be minimum $R_w$ 18. Examples of the acoustic screens (curtains) are presented in Appendix G.
- The chainsaws should not be used during night time / early morning (6:00am to 7:00am).
- Maintenance of the blades of the circular saws should be done regularly to maintain good cutting conditions and reduce noise generated by damaged equipment.
- Mobile plant to be fitted with broadband reversing beepers. All reversing beepers should meet the relevant occupational safety requirements. This should be implemented for plant operating during night-time hours where reasonable and practicable.
- Use mufflers and engine covers/screens where appropriate for generators and mobile plant.
- Care should be taken to reduce noise when loading or unloading vehicles or moving materials. Minimise drop height of materials when transferring (e.g loading and unloading vehicles and storage areas).

Provided the recommendations of this report are fully implemented, there are no further acoustic constraints on the operation of the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger.

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### Tables

## Figures



## Appendices

## Acoustics Glossary

| | |
|---|---|
| **A-weighting** | Correction to sound levels to mimic the response of the human ear at low sound frequencies. A-weighting filter covers the full audio range - 20 Hz to 20 kHz and the shape mimics the response of the human ear at the lower frequency levels. |
| **Decibel (dB)** | (1) Degree of loudness (2) A unit for expressing the relative intensity of sounds on a scale from zero for the average least perceptible sound to about 130 for the average pain level. A unit used to express relative difference in power or intensity, between two acoustic signals, equal to ten times the common logarithm of the ratio of the two levels, one of which is a standard reference value. |
| **dB(A)** | The A-weighted sound pressure level in dB. |
| **Façade adjusted** | The noise level at 1m from a building façade is calculated by adding 2.5dB to the free-field noise level to account for sound reflected from the building façade. The external noise levels at the buildings facades are "façade-adjusted". |
| **Free-field** | Noise level without any reflected sound from buildings or other hard, reflective surfaces (except for the ground plane). |
| **Hz (Hertz)** | Hertz is the standard measure of the frequency of oscillations in a wave motion. The frequency is most often measured in cycles per second (cps) or Hertz (Hz). Frequency of 1 Hz is one cycle per second. |
| **Impulsive noise and impulsiveness adjustment** | Noise having a high peak of short duration or a sequence of such peaks. Impulsive noise is present if the difference in A-weighted maximum noise levels between fast response and impulse response is greater than 2dB. Impulsiveness adjustment (penalty) of up to 5dB should be applied to the component noise level. |
| **$L_{Amax,T}$** | The maximum A-weighted sound pressure level occurring in a specified time period T in seconds. |
| **$L_{Aeq,T}$** | "Average-energy" sound level used in situations where sound varies over time. $L_{Aeq,T}$ is the A-weighted sound pressure level that has the same energy as the fluctuating sound over the time period T in seconds. |
| **$L_{A1,T}$** | Measure of the maximum sound level. $L_{A01,T}$ is a statistical parameter that is the A-weighted sound pressure level that is exceeded for 1% of the measurement time T. |
| **$L_{A10,T}$** | $L_{A10,T}$ is a statistical parameter that is the A-weighted sound pressure level that is exceeded for 10% of the measurement time T. Used as a traffic noise descriptor in Queensland. |
| **$L_{A90,T}$** | Background sound level. $L_{A90,T}$ is a statistical parameter that is the A-weighted sound pressure level that is exceeded for 90% of the measurement time T. |
| **Noise** | Unwanted sound. |
| **Octave bands and 1/3 octave bands** | A range of frequencies whose upper frequency limit is twice that of its lower frequency limit. In acoustics, the audible spectrum (20Hz to 20kHz) is divided into 10 parts |

| | |
|---|---|
| | (octaves) with centre frequencies of 31.5Hz, 63Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz, 8kHz and 16kHz.<br><br>For more detailed frequency analysis, octave bands are further divided into more discrete bands. For examples, 1/3 octaves bands are where each octave band is divided into three parts.<br><br>IEC 61260:1995, *Electroacoustics — Octave-band and fractional-octave band filters* |
| **Sound power** | The sound energy radiated per unit time by a sound source, measured in Watts (W). |
| **Sound Power Level, $L_w$ (SWL)** | Logarithmic measure of sound power on a decibel scale, referenced to the human hearing threshold of $1 \times 10^{-12}$ W. |
| **Sound pressure** | The fluctuations in air, measured in Pascals (Pa). |
| **Sound Pressure Level, $L_p$ (SPL)** | Logarithmic measure of sound pressure on a decibel scale, referenced to the human hearing threshold of $2 \times 10^{-5}$ Pa. |
| **Tonal noise, tonality, and tonality adjustment** | Tonal noise is characterised by one or more distinct frequency components (“tones”) that emerge audibly from the total sound. For example, distinct tones may be emitted by fans, saws, grinders, and other equipment. Tonal noise is generally far more annoying than non-tonal noise. Presence of tonal sound (“tonality”) can be identified by analysing the sound levels in adjacent 1/3 octave bands.<br><br>AS1055.1-1997 and the DEHP Noise Measurement Manual 2013 provides guidance on how tonality should be assessed. If tonal components are clearly audible and they can be detected by 1/3 octave analysis (1/3 octave band exceeds neighbouring bands by at least 5dB), tonality adjustment (penalty) of up to 5dB should be applied to the component noise level. |
| **Weighted Sound Reduction Index ($R_w$)** | A single-number quantity which characterises the airborne sound insulation of a material or building element over a range of frequencies. |

# 1. Introduction

## 1.1 Project Background

ATP Consulting Engineers (ATP) was engaged to prepare a noise impact assessment (NIA) report for the approved development for timber milling and woodchipping facility at 157 Boonenne Road in Goodger.

Approval is being sought from the Department of Environment and Science for the following Environmentally Relevant Activities (ERA's):

- **ERA 47 –** *Timber milling and shredder (b) 10,000t to 20,000t per year.*

The Boonenne Timbers sawmill operation currently mills less than 5,000t per year and is proposing to increase over time to over 10,000t but less than 20,000t per year.

The existing sawmill operational footprint will remain the same with upgrades being made over time to the individual sawmilling unit operations to facilitate the increase in capacity. It should be noted that the proposed upgrades of the facility will not increase the maximum noise levels, it will simply extend the duration of noise emissions to all days permitted operation.

The purpose of this report is to assess the potential noise impacts from the proposed increase in capacity of the development on the nearest noise sensitive places in accordance with the South Burnett Regional Council *Planning Scheme 2017* and the *Environmental Protection (Noise) Policy 2019*.

The noise sources and operational scenarios included in this report have been considered based on the scale and intensity of the operations at the existing timber milling and woodchipping facility, because no changes are expected to the noise sources at 157 Boonenne Road in Goodger.

## 1.2 Study Objectives

Study objectives are as follows:

- Noise measurements using an automated noise logger to obtain data on the existing background noise levels.
- Extensive noise survey of the site to determine the noise emissions from each individual noise source and the noise levels at the boundaries of the site.
- Noise propagation modelling, considering typical noise emissions associated with the use of the existing facility to calculate the noise levels at the nearest noise sensitive places.
- Assessment of the noise levels against the relevant noise criteria from the *Environmental Protection (Noise) Policy 2019*.
- Recommendation of noise mitigation measures to prevent noise impacts on the nearest noise sensitive places (if required).

## 1.3 Subject Site

The existing timber milling and woodchipping facility is located at 157 Boonenne Road in Goodger, on the land described as Lot 4 on RP807137

The site is located within the South Burnett Regional Council (SBRC) local government area and is presented in Figure 1.1.


Figure 1.1 Site location

The existing sawmill will include the following activities and operations:

- Delivery and storage of sawn hardwood logs;
- Timber cutting and storage; and
- Dispatch and other activities such as office space for sales and administration and workshop.

The existing timber milling and woodchipping facility operates 5 days a week (Monday to Friday) from 6:00am to 3:00pm. The approved development layout of the subject site is presented in Appendix A.

## 1.4 Nearest Noise Sensitive Places

The definition of "noise sensitive place" considered by DES includes a sensitive receptor for the purposes of the *EPNP 2019*. The definition of "sensitive receptor" stated in the *EPNP 2019* is: "sensitive receptor means an area or place where noise is measured". The types of sensitive receptors are listed in Schedule 1 of *EPNP 2019* and include residences, libraries and educational institutions, childcare centres, hospitals, and other medical institutions and commercial or retail activities.

The nearest noise sensitive residential receptors to the site are the low-set dwellings across Boonenne Road and to the south of the existing development.

The nearest noise sensitive places to the existing development at 157 Boonenne Road are listed in Table 1.1.

**Table 1.1 Nearest noise sensitive places**

| Street address | Type | Zoning |
|---|---|---|
| No. 156 Boonenne Road | Low-set dwelling | Rural |
| No. 169 Boonenne Road | Low-set dwelling | Rural |
| No. 186 Boonenne Road | Low-set dwelling | Rural |

As per the South Burnett Regional Council Planning Scheme V1.4 (2017), the site is zoned *Rural*, with the surroundings zoned as *Rural*.

The nearest noise sensitive places are identified in Figure 1.2, overlaid over the zoning map from the South Burnett Regional Council Planning *Scheme*.


Figure 1.2 Nearest noise sensitive places

# 2. Existing Noise Amenity

## 2.1 Site-Specific Noise Measurements

Background noise monitoring was carried out in the period from 21 June to 1 July 2023 using an automated noise logger deployed along the southern boundary of Lot 3 on RP15595, No. 156 Boonenne Road, to record the background noise levels representative of the noise amenity at the nearest noise sensitive places.

In addition, a noise survey was carried out at the existing timber milling and woodchipping facility on 21 June 2023 (Wednesday).

The noise measurement methodology is summarised in Table 2.1.

**Table 2.1 Noise measurements**

| | |
|---|---|
| **Relevant legislation, standards, and guidelines** | The noise measurements were carried out in accordance with:<br>• Australian Standard AS 1055:2018 (*Acoustics – Description and measurement of environmental noise*).<br>• DES *Noise Measurement Manual v. 4.1*, 10 March 2020 |
| **Measurement location** | The background noise measurements were carried out along the southern boundary of Lot 3 on RP15595, No. 156 Boonenne Road, as presented in Figure 2.1.<br>The noise survey locations are presented in Figure 2.2<br>Photos showing the noise measurement locations are presented in Appendix B. |
| **Measurement period** | Continuous background noise monitoring was carried out along Boonenne Road in Goodger, 24 hours a day from 21 June to 1 July 2023.<br>Noise survey at the timber milling and woodchipping facility was carried out between 11:00am and 1:00pm on 21 June 2023 (Wednesday), while standard operations were taking place at the facility. |
| **Measurement equipment** | The following sound measurement equipment was used:<br>• Environmental noise logger – ARL Ngara (Serial No. 8780D2);<br>• Sound level meters – SVAN 977A (serial no. 92109 and 92176); and<br>• Calibration – RION NC-75 Sound Level Calibrator (serial no. 34413140).<br>The noise measurement instruments conform to Australian Standard AS/NZS IEC61672.1-2019. Calibration was performed during set up and download of the data from the noise logger. The calibration drift was <0.1 dB(A). |
| **Meteorological conditions** | The weather conditions during the monitoring period from 21 June to 1 July 2023 were mostly fine, no inclement weather was recorded on this period.<br>Full meteorological data for the noise monitoring period is presented in Appendix C. |

| | |
|---|---|
| **Analysis of data** | The background noise data was analysed to determine the following noise descriptor:<br>• $L_{A90,T}$: Background noise level during daytime (7am to 6pm), evening (6pm to 10pm) and night-time (10pm to 7am).<br>The noise survey data at 15 Boonenne Road was analysed to determine the following noise descriptors:<br>• $L_{Aeq,T}$, $L_{A10,T}$, $L_{A1,T}$, $L_{Amax,T}$ and $L_{A90,T}$;<br>• $L_{Aeq,T}$ in 1/3 octave bands to assess tonality; and<br>$L_{Amax,T}$(Fast) and $L_{Amax,T}$(Impulse) to assess impulsiveness. |

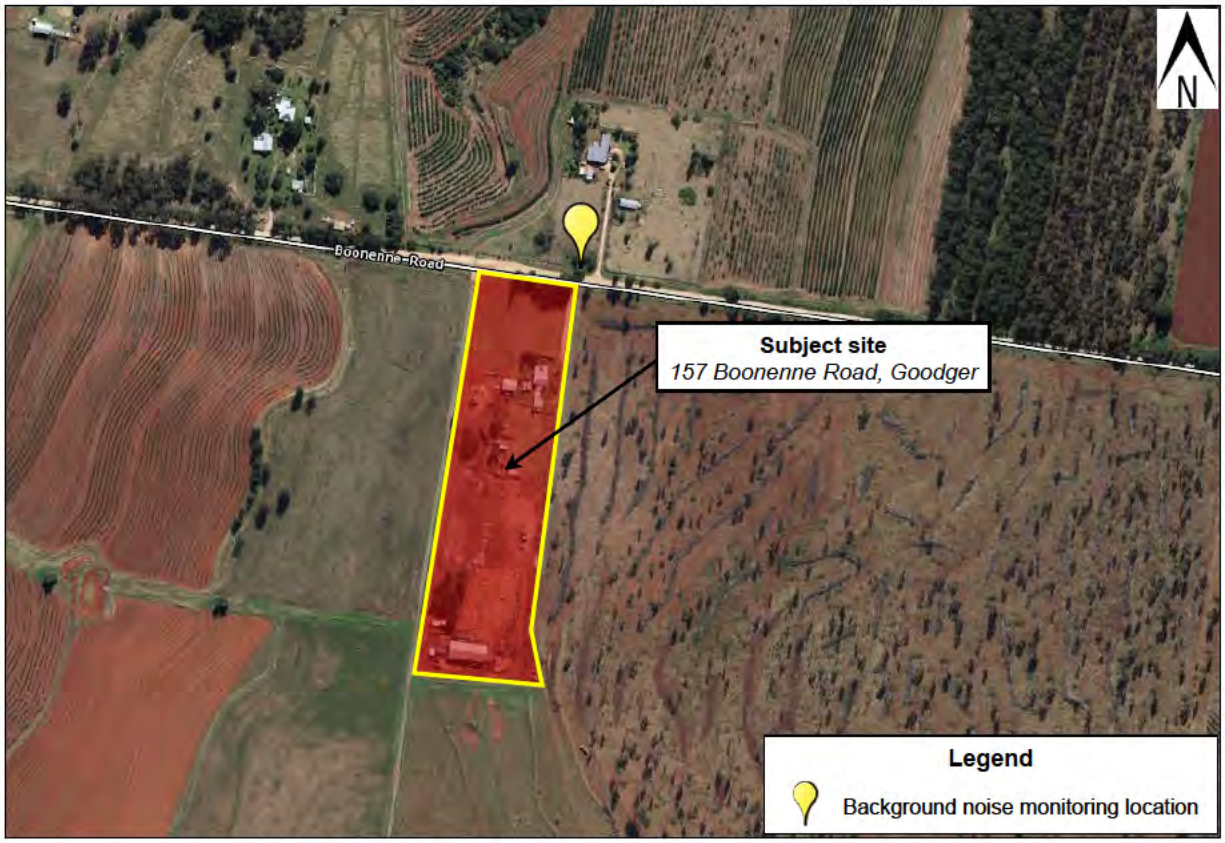



Figure 2.1 Background noise monitoring location

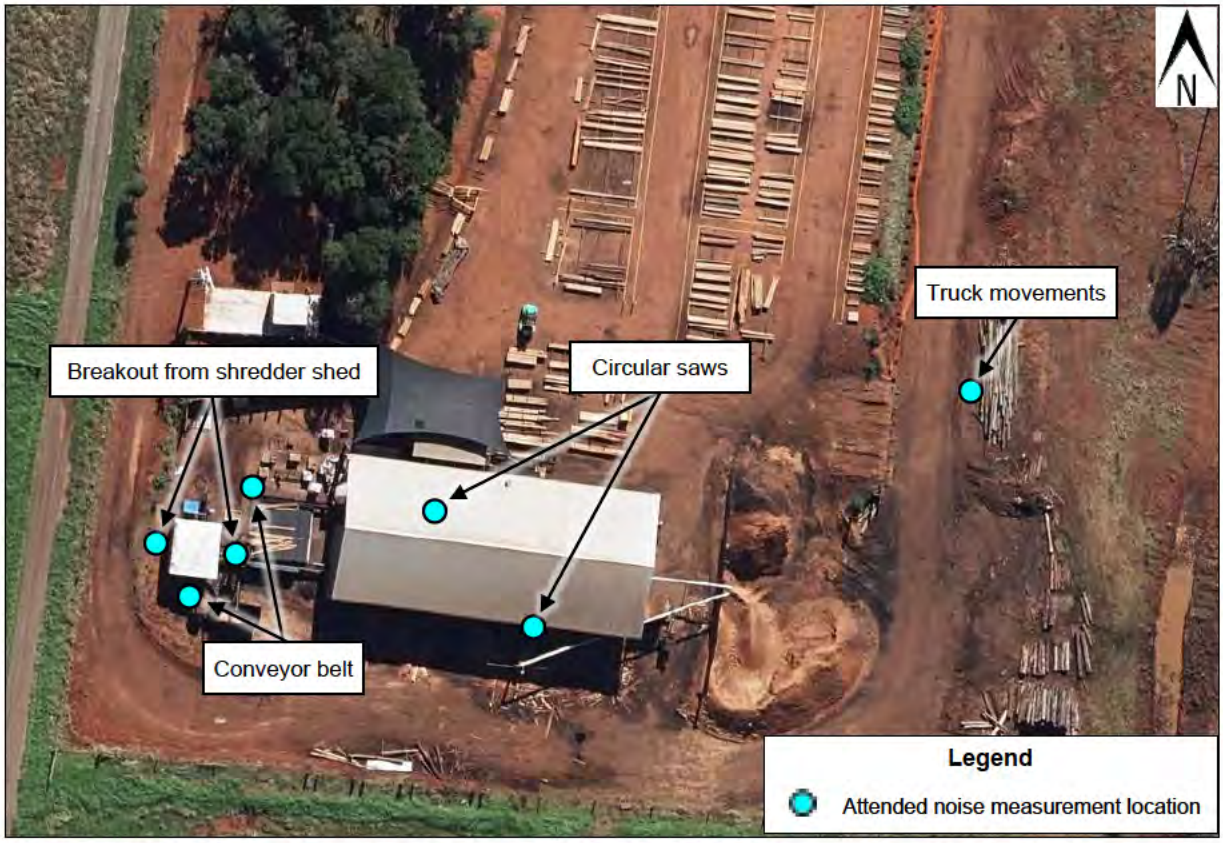



Figure 2.2 Noise survey locations at existing timber milling and woodchipping facility

## 2.2 Measurement Results

### 2.2.1 Background noise monitoring

The results of the background noise measurements undertaken from 21 June to 1 July 2023, expressed in terms of the relevant noise descriptors, are presented in Table 2.2 and Appendix D.

Table 2.2 Measured background noise levels

| Date | Background noise levels $L_{90}$ dB(A) | | |
|---|---|---|---|
| | $L_{90,11hr,Day}$ (7am–6pm) | $L_{90,4hr,Evening}$ (6pm–10pm) | $L_{90,9hr,Night}$ (10pm–7am) |
| 21 June 2023 (Wed) | — | 26 | 24 |
| 22 June 2023 (Thu) | 35 | 30 | 27 |
| 23 June 2023 (Fri) | 38 | 26 | 22 |
| 24 June 2023 (Sat) | 35 | 22 | 22 |
| 25 June 2023 (Sun) | 35 | 25 | 23 |
| 26 June 2023 (Mon) | 37 | 22 | 23 |
| 27 June 2023 (Tue) | 33 | 25 | 24 |

| Date | Background noise levels $L_{90}$ dB(A) | | |
|---|---|---|---|
| | $L_{90,11hr,Day}$ (7am–6pm) | $L_{90,4hr,Evening}$ (6pm–10pm) | $L_{90,9hr,Night}$ (10pm–7am) |
| 28 June 2023 (Wed) | 36 | 30 | 32 |
| 29 June 2023 (Thu) | 39 | 29 | 26 |
| 30 June 2023 (Fri) | 34 | 23 | 22 |
| 1 July 2023 (Sat) | 29 | 22 | 25 |
| **Arithmetic Average** | **35** | **26** | **25** |

### 2.2.2 Operational Noise Measurements Results – Near Field

Attended noise measurements were carried out at near-field locations to the equipment at the existing timber milling and woodchipping facility at 157 Boonenne Road during the current hours of operation, to determine the sound power levels of the equipment.

The results of the measurement of the operational noise levels from the mechanical equipment and plant, as carried out on 21 June 2023 (Wednesday), are presented in Table 2.4.

Table 2.3 Attended noise measurements – 21 June 2023

| Location | Source | Measurement location | Measured Sound Pressure Level (SPL) $L_{eq,adj,T}$ dB(A) | Measured Sound Power Level (SWL) $L_{eq,adj,T}$ dB(A) |
|---|---|---|---|---|
| Covered area | Circular saws | 1m setback | 91.6 | 99.5 |
| Shredder shed Western façade | Shredder | 1m setback | 70.9 | 78.9 |
| Shredder shed Eastern façade | Shredder | 1m setback | 93.2 | 101.1 |
| Covered area | Conveyor belt | 1m setback | 81.7 | 89.6 |
| Internal driveways | Truck movements | 1m setback | 63.3 | 71.3 |

# 3. Noise Criteria

The following documents outline the information to be provided to support a development application and environmental authority application for activities with noise impacts:

- Department of Environment and Science (DES), *Guideline: Environmental Protection Act 1994*, *Application requirements for activities with noise impacts*, 3 February 2020.
- South Burnett Regional Council Planning Scheme (2017).

The DES guideline states the following:

> *When deciding an application, the department is required to assess the application against requirements stipulated in the EP Act, including considerations stated in the EP Regulation and any relevant Environmental Protection Policy, including the EPP (Noise).*
>
> *For environmental authority applications that have noise impacts the application must describe how one of the following environmental objective and performance outcomes for the ERA will be achieved. Under Schedule 8, Part 3, Division 1 of the EP Regulation the environmental objectives and performance outcomes for noise emissions in Queensland are:*
>
> ***Environmental objective***
>
> *The activity will be operated in a way that protects the environmental values of the acoustic environment.*
>
> ***Performance outcome***
>
> *(a) Sound from the activity is not audible at a sensitive receptor, or*
>
> *(b) The release of sound to the environment from the activity is managed so that adverse effects on environmental values including health and wellbeing and sensitive ecosystems are prevented or minimised.*

The DES refers to the relevant Queensland legislation for regulating noise, including the *Environmental Protection (Noise) Policy 2019*.

## 3.1 South Burnett Regional Council Planning Scheme 2017

The *South Burnett Regional Council Planning Scheme (2017)* does not specify environmental noise limits when assessing potential noise impacts from commercial and industrial uses. As such, the noise limits stated in the *Environmental Protection (Noise) Policy 2019* were considered for the existing development.

## 3.2 Environmental Protection (Noise) Policy 2019

### 3.2.1 Acoustic Quality Objectives

The *Environmental Protection (Noise) Policy 2019* identifies environmental values for the acoustic environment and sets acoustic quality objectives for sensitive receptors. The purpose of the acoustic

quality objectives is to protect the acoustic amenity of the environment. The criteria from Schedule 1 of the policy are presented in Table 3.1.

Table 3.1 Environmental noise criteria

| Sensitive receptor | Location | Period | Acoustic quality objectives | | | Environmental value |
|---|---|---|---|---|---|---|
| | | | $L_{Aeq,adj,1\text{-}hr}$ | $L_{A10,adj,1\text{-}hr}$ | $L_{A01,adj,1\text{-}hr}$ | |
| Residence | Indoors | Day time and evening | 35 | 40 | 45 | Health and wellbeing |
| | | Night-time | 30 | 35 | 40 | Health and wellbeing, in relation to the ability to sleep |
| | Outdoors | Day time and evening | 50 | 55 | 65 | Health and wellbeing |
| | | Night-time | 37 (30 + 7) | 42 (35 + 7) | 47 (40 + 7) | Health and wellbeing, in relation to the ability to sleep |

The following is noted regarding the acoustic quality objectives:

- Under the *Noise Policy*, daytime is 7am to 6pm, evening is 6pm to 10pm and night-time is 10pm to 7am.
- The *Noise Policy* specify outdoor noise criteria of 30 dB(A) for dwellings during night-time. Since the noise propagation modelling results are calculated on the external façades of the noise sensitive buildings, the external noise criteria are derived with consideration of 7dB noise reduction by the building envelope with closed single glazed windows[1].
- The assessment of compliance with the operational noise criteria is based on the results of the noise propagation modelling for a period of 1-hour with maximum noise emissions.

### 3.2.2 Background Creep

Controlling background creep[2] is an important consideration under the *Environmental Protection (Noise) Policy 2019* and the background creep criteria states the following:

*To the extent that it is reasonable to do so, noise from an activity must not be:*

- *For noise that is continuous noise measured by $L_{A90,T}$ – more than nil dB(A) greater than the existing acoustic environment measured by $L_{A90,T}$.*
- *For noise that varies over time measured by $L_{Aeq,adj,T}$ – more than 5dB(A) greater than the existing acoustic environment measured by $L_{A90,T}$.*

It should be noted that the 2019 version of the *Noise Policy* no longer includes the background creep criteria as written above. However, the *Policy* includes the following statement "*To the extent it is reasonable to do so, noise must be dealt with in a way that ensures– background creep in an area*

[1] Typical noise reduction for single glazed windows partially open, *Planning for Noise Control Guideline*, Dept. of Environment and Science (DES).
[2] Background creep is defined as an increase in the background noise levels due to constant addition of new noise sources in the environment. The purpose of the background creep noise criteria is to prevent increase in the background noise level ($L_{90,T}$), which is the main noise amenity descriptor.

*or place is prevented or minimised*." Therefore, it is a requirement that background creep is assessed so ATP has continued to use the background creep criteria as written in the previous 2008 Policy.

The background creep criteria, based on the lowest measured existing background noise levels, presented in Section 2.2 of this report, are presented in Table 3.2.

**Table 3.2 Background creep noise criteria**

| Noise characteristic | Background creep criteria, $L_{Aeq,adj,T}$ | | |
|---|---|---|---|
| | **Day 7:00am to 6:00pm** | **Evening 6:00pm to 10:00pm** | **Night 10:00pm to 7:00am** |
| Continuous noise | **35** (RBL + 0) | **26** (RBL + 0) | **25** (RBL + 0) |
| Time-varying noise | **40** (RBL + 5) | **31** (RBL + 5) | **30** (RBL + 5) |

# 4. Noise Propagation Modelling

## 4.1 Modelling Methodology

A 3D model of the development and surroundings was developed using SoundPLAN noise propagation software considering the location and sound power levels of the dominant noise sources at the development.

The calculations were carried out as per the procedures specified in the International Standard ISO9613 (*Acoustics – Attenuation of sound during propagation outdoors*).

The calculation method for a single frequency is as follows:

$$L_S = [\ L_W + K_0\ ] - [\ A_{dI} + A_{div} + A_{gr} + A_{bar} + A_{atm} + d_{Lrefl} + d_{Lw}\ ]$$

Where:

| | |
|---|---|
| $L_S$ | Sound pressure for a single frequency |
| $L_W$ | Sound power of source |
| $K_0$ | Correction for propagation in limited spacial angle |
| $A_{DI}$ | Mean directivity correction |
| $A_{div}$ | Mean attenuation due to geometrical spreading |
| $A_{gr}$ | Mean attenuation due to ground effect |
| $A_{bar}$ | Mean attenuation due to screening |
| $A_{atm}$ | Mean attenuation due to air absorption |
| $d_{Lrefl}$ | Level increase due to reflections |
| $d_{Lw}$ | Correction due to source operation time |

The noise propagation losses are calculated as a combination of distance attenuation (geometrical spreading), screening, ground attenuation and other factors.

The results of noise modelling as per ISO9613 are in terms of $L_{eq}$. A conversion factor was applied to $L_{eq}$ to obtain results in terms of the other assessment criteria $L_{10}$ and $L_{01}$. The conversion factors are presented in Table 4.1.

**Table 4.1 Noise descriptor conversion factors**

| Type of noise | Conversion factors | |
|---|---|---|
| | $L_{eq}$ to $L_{10}$ | $L_{eq}$ to $L_{01}$ |
| Non-continuous noise | $L_{10} = L_{eq} + 3$ dB | $L_{01} = L_{eq} + 8$ dB |
| Continuous noise | $L_{10} = L_{eq}$ | $L_{01} = L_{eq}$ |

The assumptions and data used in development of the operational noise propagation model are presented in Table 4.2.

Table 4.2 Data and assumptions – Operational noise model

| | |
|---|---|
| **Terrain** | • Department of Natural Resources and Mines Airborne Laser Scanning (LiDAR) 1 metre data was used to determine the elevation of the development relative to the surrounds.<br>• The finished surface levels of the existing development were provided by IMEMS Pty Ltd.<br>• Ground surface absorption factor of 0 was applied to all paved surfaces and 1 for all grassed areas. |
| **Buildings** | • The existing buildings at the subject site were included in the model along with neighbouring buildings. The development layout is presented in Appendix A. |
| **Noise sources and operating times** | • Refer to Section 4.2. |
| **Receptors** | • Receptors were attached to the façades of the noise sensitive buildings at a height of 1.5m above finished floor level.<br>• SoundPLAN adds +2.5dB(A) to the calculated noise levels when the receptors are attached to the buildings, thus the noise levels are façade adjusted. |
| **Noise control measures** | • Refer to Section 5 of this report for recommended noise control measures. |
| **Distance attenuation** | • 3D model of the subject site and surroundings was developed using cadastral and survey data using SoundPLAN software. The source-receiver distances and geometrical spreading are automatically calculated in SoundPLAN to a high level of accuracy in accordance with the ISO9613 procedure.<br>• Separation distances and distance attenuation values are presented in Appendix E. |
| **Barrier attenuation / screening** | • Screening by walls and roofs was considered in the model. The screening was calculated in SoundPLAN in accordance with the ISO9613 procedure.<br>• Barrier attenuation / screening values are presented in Appendix E. |
| **Ground attenuation** | • Sound reflecting surfaces such as pavement are modelled with ground absorption coefficient of 0 (no absorption). Grassed and vegetated areas were modelled with ground absorption coefficient of 1 (100% absorption) in accordance with ISO9613.<br>• Ground attenuation values are presented in Appendix E. |

## 4.2 Noise Sources

Details of the major noise sources at the development with a potential to impact on the nearest noise sensitive places are presented in Table 4.3.

The noise sources used in Table 4.3 have been sourced from SoundPLAN emission library and noise measurements carried out at similar type of developments.

Table 4.3 Noise sources

| Operational Noise Source | Location (refer Figures 4.1 and 4.2) | Sound Power Level dB(A) (re $10^{-12}$W) | Operational Scenario | Tonality/ Impulsiveness |
|---|---|---|---|---|
| Chainsaw | Log yard | 114.0 dB(A) – Point Source<br><br>Derived from chainsaw manufacturer specifications – Stihl MS660 | 60min per day from 7:00am to 3:00pm | +5 dB for tonality |
| Combined noise from conveyor belts and timber processing tools | Covered area | 88.3 dB(A) – Area source<br><br>Derived from noise measurements at the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger. | Continuous operation 6:00am to 3:00pm | +5 dB for tonality |
| Circular saws | Covered area | 99.4 dB(A) – Point source<br><br>Derived from noise measurements at the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger. | 6min per hour from 6:00am to 3:00pm | +5 dB for tonality |
| Shredder | Eastern façade of the shredder shed | 100.2 dB(A) – Point source<br><br>Derived from noise measurements at the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger. | Continuous operation 6:00am to 3:00pm | +5 dB for tonality |
| Breakout noise – shredder shed | Shredder shed | 78.7 dB(A) sound power level per unit, radiated from the external walls and roof of the shredder shed.<br><br>Derived from noise measurements at the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger. | Continuous operation 6:00am to 3:00pm | +5 dB for tonality |
| Breakout noise – Flexishield | Eastern façade of the shredder shed | 82.7 dB(A) sound power level per unit, radiated from the northern and southern external Flexishield curtains on the Eastern façade of the shredder shed.<br><br>Derived from noise measurements at the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger. | Continuous operation 6:00am to 3:00pm | +5 dB for tonality |

| Operational Noise Source | Location (refer Figures 4.1 and 4.2) | Sound Power Level dB(A) (re $10^{-12}$W) | Operational Scenario | Tonality/ Impulsiveness |
|---|---|---|---|---|
| Truck movements | Internal driveways | 70.7dB(A) – Line source<br><br>Derived from noise measurements at the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger. | 10 movements per hour from 6:00am to 3:00pm | n/a |
| Forklift and trucks loading | Sawn timber storage and dispatch | 92.0 dB(A) – Area source<br><br>SoundPLAN Library: Truck loading low lift | Continuous operation 6:00am to 3:00pm | +5 dB for tonality |
| Staff and visitor carpark | Office area | SoundPLAN calculates[3] noise emissions from parking areas based on the number of parking bays, surface type, and the type of parking lot, and considers the impact noise of a car door closing – 'slam'.<br><br>The data input for the car parks is as follows:<br>• No. Parking Bays: 15<br>• Surface Type: Gravel<br>• Parking Lot Type: Staff and visitors | • 15 movements between 6:00am to 7:00am<br>• 8 movements per hour between 7:00am to 2:00pm<br>• 15 movements per hour between 2:00pm to 3:00pm | +5 dB for impulsiveness |

Excerpt from the SoundPLAN 3D noise propagation model is presented in Figures 4.1 and 4.2.

[3] SoundPLAN uses the methodology of the Bavarian parking lot study (2007) to calculate car park noise emissions. (Bavarian State Agency for the Environment 2007, *Parking Area Noise*, 6th Edition, Bavarian State Ministry for the Environment, Germany).

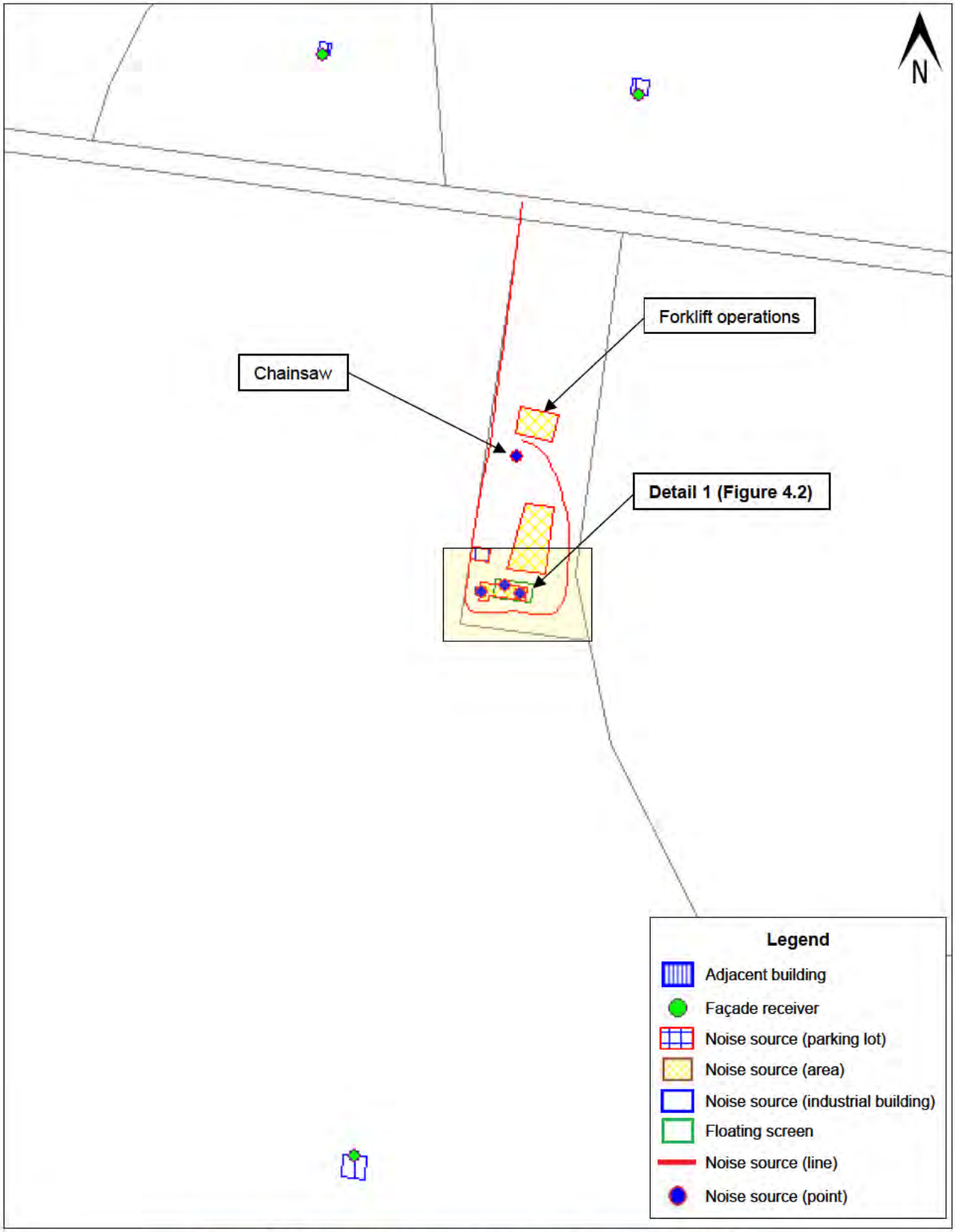



Figure 4.1 SoundPLAN operational noise model – Overview

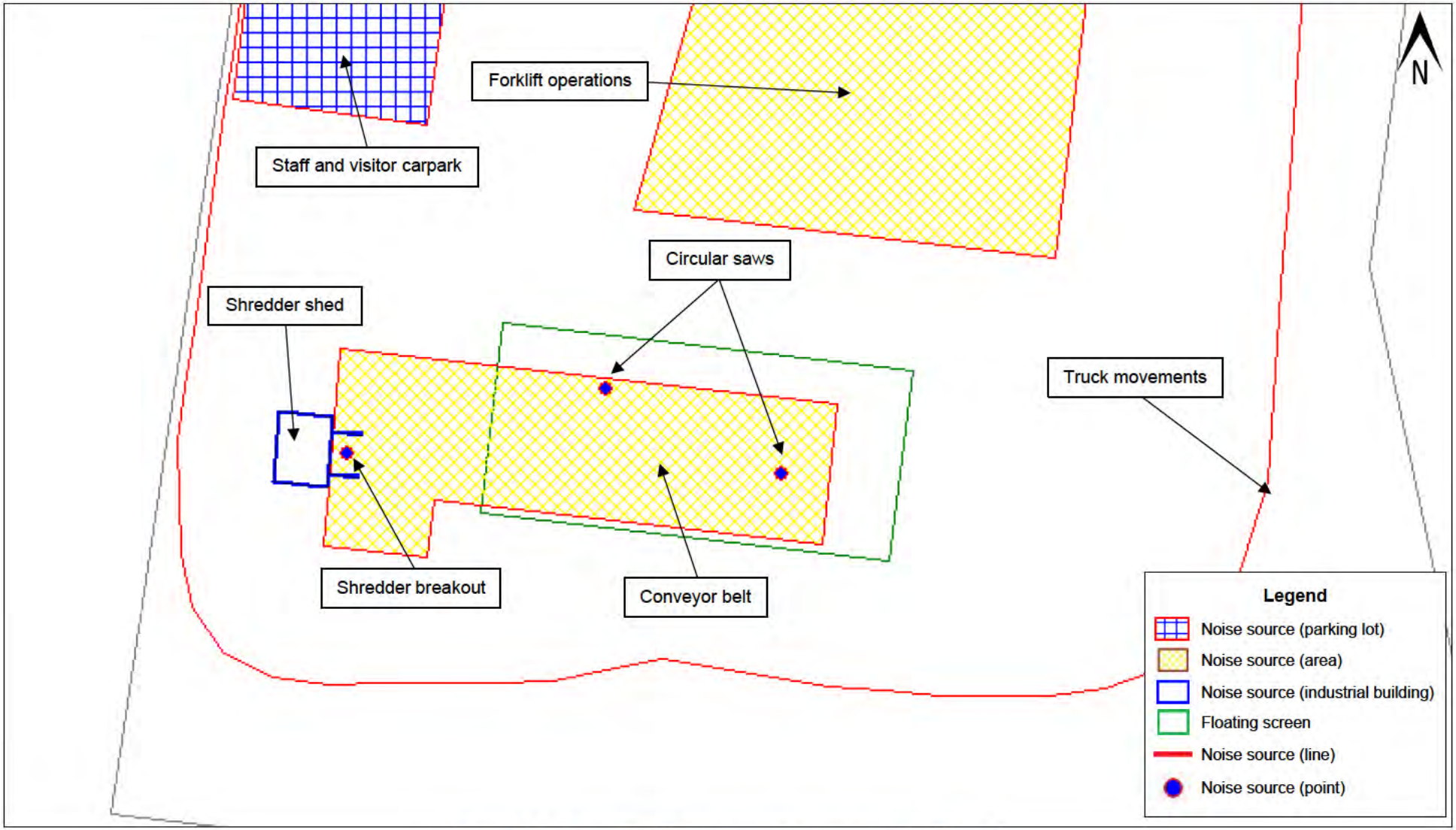



Figure 4.2 SoundPLAN operational noise model – Detail 1

## 4.3 Operational Noise Calculation Results

### 4.3.1 Acoustic Quality Objectives

Summary of the highest calculated noise levels for time interval T = 1hr at the nearest noise sensitive places, relative to the acoustic quality objectives, are presented in Table 4.4.

Table 4.4 Operational noise levels – Acoustic quality objectives

| Location | Calculated noise levels | | | | | | | | | Complies with noise criteria? |
|---|---|---|---|---|---|---|---|---|---|---|
| | $L_{eq,adj,1hr}$ day dB(A) | $L_{eq,adj,1hr}$ evening dB(A) | $L_{eq,adj,1hr}$ night dB(A) | $L_{10,adj,1hr}$ day dB(A) | $L_{10,adj,1hr}$ evening dB(A) | $L_{10,adj,1hr}$ night dB(A) | $L_{01,adj,1hr}$ day dB(A) | $L_{01,adj,1hr}$ evening dB(A) | $L_{01,adj,1hr}$ night dB(A) | |
| *EP Noise 2019 acoustic quality objectives (external criteria) for residences:* | 50 | 50 | 37 | 55 | 55 | 42 | 65 | 65 | 47 | |
| No. 156 Boonenne Road | 44 | - | 37 | 46 | - | 39 | 52 | - | 45 | Yes |
| No. 169 Boonenne Road | 39 | - | 35 | 41 | - | 37 | 47 | - | 43 | Yes |
| No. 186 Boonenne Road | 42 | - | 35 | 44 | - | 37 | 50 | - | 43 | Yes |

### 4.3.2 Background Creep

Summary of the highest calculated noise levels for the time interval T = 11hr, 4hr and 9hr at the nearest noise sensitive places, relative to the background creep criteria, are presented in Table 4.5.

Table 4.5 Operational noise levels – Background creep

| Location | Calculated noise levels | | | Complies with noise criteria? |
|---|---|---|---|---|
| | $L_{eq,adj,11hr}$ Day dB(A) | $L_{eq,adj,4hr}$ Evening dB(A) | $L_{eq,adj,9hr}$ Night dB(A) | |
| *EP Noise Policy 2008* background creep (external criteria): | | | | |
| Continuous noise | 35 | 26 | 25 | |
| Variable noise | 40 | 31 | 30 | |
| No. 156 Boonenne Road | 40 | - | 28 | Yes |
| No. 169 Boonenne Road | 36 | - | 26 | Yes |
| No. 186 Boonenne Road | 38 | - | 26 | Yes |

SoundPLAN tabulated noise levels (cumulative noise impacts) are presented in Appendix E.

Separate acoustic impacts of the individual noise sources considered in the SoundPLAN model, and the noise propagation modelling factors as per International Standard ISO9613 (*Acoustics – Attenuation of sound during propagation outdoors*) calculation method are also presented in Appendix E.

Noise propagation modelling contour maps are presented in Appendix F.

# 5. Discussion and Recommendations

Detailed noise propagation modelling was carried out considering all potential noise emissions from the operation of the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger to determine the potential noise impact on the nearest noise sensitive places.

The noise sources and operational scenarios included in this report have been considered based on the scale and intensity of the operations at the existing timber milling and woodchipping facility, because no changes are expected to the noise sources at 157 Boonenne Road in Goodger. The dominant noise sources are located at the covered work area, and these include noise from the circular saw and shredder. Other noise sources include delivery and dispatch of materials (truck movements), forklifts and staff and visitor parking.

The relevant noise criteria from the *Environmental Protection (Noise) Policy 2019* and the relevant general development provisions in accordance with the *South Burnett Regional Council Planning Scheme* were considered in this assessment.

The nearest noise sensitive residential receptors to the site are the low-set dwellings along Boonenne Road. However, it is to be noted that the dwellings are mostly used in association with rural activities or for commercial operations, rather than as Dwellings.

The results of the conservative noise propagation modelling indicate that there will be no noise impacts on the nearest noise sensitive land uses, mainly because the most dominant noise sources are located at the covered area, which is at the back of the development, approximately 330 metres from Boonenne Road and approximately 450 metres from the nearest noise sensitive use at 156 Boonenne Road.

## 5.1 Noise Mitigation Measures

To ensure ongoing compliance with the noise criteria at the nearest noise sensitive receptors, the following mitigation measures are recommended for the establishment of the existing development:

- Acoustic screen in a form of industrial PVC – Strip curtains such as *Flexishield* or similar are required for the openings (end of the conveyor belt course) on the eastern façade of the shredder shed to prevent noise impact on the nearest noise sensitive places. The alignment of the acoustic screen is presented in Figure 5.1.


Figure 5.1 Alignment of acoustic screen (shredder shed)

- The acoustic screens (curtains) should be minimum 4mm thick and with 100 to 120mm overlaps. The weighted sound reduction index should be minimum $R_w$ 18. Examples of the acoustic screens (curtains) are presented in Appendix G.
- The chainsaws should not be used during night time (6:00am to 7:00am).
- Maintenance of the blades of the circular saws should be done regularly to maintain good cutting conditions and reduce noise generated by damaged equipment.
- Mobile plant to be fitted with broadband reversing beepers. All reversing beepers should meet the relevant occupational safety requirements. This should be implemented for plant operating during night-time hours where reasonable and practicable.
- Use mufflers and engine covers/screens where appropriate for generators and mobile plant.
- Care should be taken to reduce noise when loading or unloading vehicles or moving materials wtc. Minimise drop height of materials when transferring (e.g loading and unloading vehicles and storage areas).

Provided the recommendations of this report are fully implemented, there are no further acoustic constraints on the operation of the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger.

## 6. References


- Australian Standard *AS 1055:2018 (Acoustics – Description and Measurement of Environmental Noise)*
- Australian Standard *AS/NZS IEC 61672.1-2019* (*Electroacoustics – Sound level meters – Specifications*)
- South Burnett Regional Council, Planning Scheme Version 1.4, 2017
- Department of Environment and Science (DES), *Guideline: Environmental Protection Act 1994, Application requirements for activities with noise impacts*, 3 February 2020.
- Department of Environment and Science (DES), *Noise Measurement Manual v. 4.1*, 10 March 2020
- International Standard ISO 9613 (*Acoustics – Attenuation of sound during propagation outdoors*)
- Queensland Government, *Environmental Protection Act 1994*
- Queensland Government, *Environmental Protection (Noise) Policy 2019*
- Queensland Government, *Environmental Protection Regulation 2019*

## 7. Appendices

Appendix A – Site Layout

Appendix B – Site Photos

Appendix C – Meteorological Data

Appendix D – Background Noise Measurement Results

Appendix E – Operational Noise Level

Appendix F – Noise Contour Maps

Appendix G – Acoustic Screening (Curtains)

# Appendix A – Site Layout


Diagram 4: Site infrastructure identified (base figure Qld Globe, November 2022).

A Residence

B Shed (not associated with Residence)

C Sawdust stockpile

D Shredded log yard waste

E Firewood stockpile

F Equipment laydown areas

G Sawn timber load-out area

H Log yard

I Mobile machinery parking area

J Water tank, toilet and bunded diesel AST

K Sawdust from Sawmill

L Sawmill (includes workshop, sawroom & chainsaw shed

M Chipper

N Office

O Transformer

P Sawn timber storage

Q Entry/exit to sawmill

R Entry/exit to residence

S Sediment basin

# Appendix B – Site Photos

Photo 1: Background noise monitoring location – view due north

Photo 2: Noise measurement (Front-end loader) – view due west

# Appendix C – Meteorological Data

# Kingaroy, Queensland
# June 2023 Daily Weather Observations

Australian Government
Bureau of Meteorology

| Date | Day | Temps | | Rain | Evap | Sun | Max wind gust | | | 9am | | | | | | 3pm | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Min | Max | | | | Dirn | Spd | Time | Temp | RH | Cld | Dirn | Spd | MSLP | Temp | RH | Cld | Dirn | Spd | MSLP |
| | | °C | °C | mm | mm | hours | | km/h | local | °C | % | eighths | | km/h | hPa | °C | % | eighths | | km/h | hPa |
| 1 | Th | 1.9 | 23.7 | 0 | | | NW | 24 | 10:25 | 14.1 | 67 | | | Calm | 1023.0 | 23.1 | 30 | | SW | 9 | 1019.3 |
| 2 | Fr | 3.2 | 24.2 | 0 | | | E | 20 | 10:15 | 14.5 | 65 | | | Calm | 1024.4 | 23.6 | 37 | | E | 11 | 1021.7 |
| 3 | Sa | 10.4 | 22.2 | 0 | | | ESE | 24 | 10:53 | 15.8 | 96 | | SSE | 13 | 1026.9 | 21.4 | 51 | | ENE | 9 | 1023.8 |
| 4 | Su | 12.4 | 19.1 | 0.8 | | | ESE | 33 | 18:35 | 16.3 | 100 | | ESE | 9 | 1027.4 | 18.7 | 90 | | ESE | 15 | 1024.5 |
| 5 | Mo | 13.5 | 17.9 | 1.8 | | | SE | 39 | 14:47 | 15.5 | 99 | | ESE | 17 | 1027.4 | 14.8 | 99 | | ESE | 19 | 1024.6 |
| 6 | Tu | 12.0 | 20.8 | 0.2 | | | ESE | 39 | 09:06 | 15.1 | 85 | | ESE | 17 | 1027.9 | 19.3 | 56 | | ESE | 15 | 1024.4 |
| 7 | We | 7.2 | 21.2 | 0 | | | E | 39 | 11:03 | 14.4 | 94 | | ESE | 11 | 1027.1 | 19.3 | 51 | | E | 13 | 1023.0 |
| 8 | Th | 6.0 | 22.4 | 0.4 | | | | | | 14.5 | 100 | | SSE | 4 | 1023.2 | 20.8 | 54 | | NNW | 11 | 1017.9 |
| 9 | Fr | 8.9 | | | | | | | | 12.3 | 100 | | | Calm | 1019.6 | 20.3 | 38 | | WSW | 13 | 1018.0 |
| 10 | Sa | -1.0 | 21.2 | | | | E | 22 | 11:03 | 13.0 | 61 | | S | 13 | 1023.5 | 20.7 | 31 | | ENE | 7 | 1020.2 |
| 11 | Su | 3.2 | 21.5 | 0 | | | E | 30 | 10:28 | 15.0 | 85 | | ESE | 13 | 1025.0 | 20.3 | 49 | | SE | 15 | 1021.1 |
| 12 | Mo | 5.4 | 21.5 | 0 | | | SSE | 30 | 14:16 | 13.2 | 100 | | S | 11 | 1023.7 | 19.0 | 60 | | ESE | 15 | 1019.4 |
| 13 | Tu | 11.1 | 24.3 | 0 | | | WNW | 41 | 11:46 | 12.6 | 100 | | S | 6 | 1020.2 | 22.9 | 38 | | SW | 19 | 1015.3 |
| 14 | We | 2.6 | 22.7 | 0 | | | W | 46 | 11:34 | 13.4 | 70 | | | Calm | 1018.6 | 21.5 | 25 | | WSW | 19 | 1016.0 |
| 15 | Th | -2.3 | 20.7 | 0 | | | SSE | 35 | 08:40 | 12.1 | 52 | | SSE | 20 | 1019.6 | 19.9 | 25 | | WSW | 15 | 1015.6 |
| 16 | Fr | -2.4 | 19.6 | 0 | | | S | 30 | 09:37 | 10.3 | 68 | | WNW | 7 | 1021.9 | 19.5 | 21 | | SSW | 15 | 1018.5 |
| 17 | Sa | -1.5 | 21.0 | 0 | | | ESE | 20 | 10:14 | 12.0 | 73 | | | Calm | 1023.2 | 20.1 | 31 | | NNW | 13 | 1018.9 |
| 18 | Su | 1.9 | 23.1 | 0 | | | SW | 31 | 22:17 | 10.5 | 94 | | | Calm | 1020.9 | 22.4 | 31 | | W | 13 | 1015.9 |
| 19 | Mo | 0.5 | 22.0 | 0 | | | WSW | 35 | 13:44 | 12.6 | 57 | | SSW | 7 | 1020.0 | 20.8 | 26 | | WSW | 19 | 1016.3 |
| 20 | Tu | -2.3 | 19.2 | 0 | | | SSW | 41 | 08:29 | 12.2 | 43 | | S | 24 | 1021.1 | 18.5 | 26 | | SSW | 17 | 1018.3 |
| 21 | We | -0.7 | 20.6 | 0 | | | E | 26 | 09:52 | 13.4 | 54 | | | Calm | 1023.3 | 20.2 | 30 | | N | 7 | 1019.6 |
| 22 | Th | 4.6 | 21.9 | 0 | | | NNW | 31 | 11:29 | 14.3 | 68 | | E | 7 | 1021.5 | 20.7 | 40 | | N | 13 | 1016.6 |
| 23 | Fr | 9.2 | 23.8 | 0 | | | WNW | 43 | 11:43 | 16.6 | 83 | | NNW | 20 | 1017.1 | 23.0 | 45 | | W | 22 | 1014.4 |
| 24 | Sa | 0.9 | 24.7 | 0 | | | W | 37 | 13:34 | 10.8 | 75 | | | Calm | 1019.3 | 24.0 | 23 | | W | 15 | 1015.7 |
| 25 | Su | 1.9 | 27.7 | 0 | | | WSW | 46 | 13:48 | 13.6 | 53 | | | Calm | 1020.1 | 26.4 | 24 | | WSW | 28 | 1016.3 |
| 26 | Mo | 6.6 | 24.4 | 0 | | | WSW | 35 | 13:26 | 17.3 | 44 | | | Calm | 1020.6 | 22.7 | 23 | | SW | 19 | 1018.0 |
| 27 | Tu | 2.8 | 24.0 | 0 | | | S | 35 | 09:42 | 15.6 | 27 | | S | 20 | 1022.1 | 23.7 | 11 | | SSE | 7 | 1019.0 |
| 28 | We | 6.4 | 26.9 | 0 | | | SW | 39 | 22:12 | 15.3 | 54 | | NW | 9 | 1020.9 | 25.5 | 31 | | NW | 20 | 1014.8 |
| 29 | Th | 12.8 | 17.3 | 0 | | | SW | 46 | 05:13 | 13.7 | 76 | | SW | 17 | 1017.4 | 15.1 | 56 | | WSW | 20 | 1017.0 |
| 30 | Fr | -0.1 | 18.1 | 0 | | | SSW | 31 | 00:01 | 8.4 | 60 | | WNW | 6 | 1022.4 | 16.8 | 25 | | SSW | 19 | 1018.9 |
| **Statistics for June 2023** | | | | | | | | | | | | | | | | | | | | | |
| | Mean | 4.5 | 22.0 | | | | | | | 13.6 | 73 | | | 8 | 1022.3 | 20.8 | 39 | | | 15 | 1018.8 |
| | Lowest | -2.4 | 17.3 | | | | | | | 8.4 | 27 | | | Calm | 1017.1 | 14.8 | 11 | | # | 7 | 1014.4 |
| | Highest | 13.5 | 27.7 | 1.8 | | | # | 46 | | 17.3 | 100 | | S | 24 | 1027.9 | 26.4 | 99 | | WSW | 28 | 1024.6 |
| | Total | | | 3.2 | | | | | | | | | | | | | | | | | |

Observations were drawn from Kingaroy Airport {station 040922}

IDCJDW4069.202306 Prepared at 13:01 UTC on 2 Jul 2023

# Appendix D – Background Noise Measurement Results

## Unattended Noise Measurements
## Boonenne Timbers

Environmental Noise Levels Day, Evening and Night

**Logger Location - Southern boundary of Lot 3 on RP15595**

| | |
|---|---|
| ARL Environmental Noise Logger | |
| Logger Serial Number | 8780D2 |
| Measurement Title | 20230621_130816 |
| Measurement started at | 21/06 13:15 |
| Measurement stopped at | 02/07 12:45 |
| Frequency Weighting | A |
| Time Averaging | Fast |
| Statistical Interval | 15 min |
| Pre-measurement Ref. | 94.0 |
| Post-measurement Ref. | 93.9 |
| Engineering Units | dB SPL |

| | | $L_{Aeq,T}$ dB(A) | | | $L_{A01,T}$ dB(A) | | | $L_{A10,T}$ dB(A) | | | $L_{A90,T}$ dB(A) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Date** | **Day** | **D** | **E** | **N** | **D** | **E** | **N** | **D** | **E** | **N** | **D** | **E** | **N** |
| 21/06/2023 | Wednesday | — | 32 | 30 | — | 41 | 38 | — | 35 | 32 | — | 26 | 24 |
| 22/06/2023 | Thursday | 48 | 35 | 33 | 60 | 43 | 42 | 48 | 38 | 35 | 35 | 30 | 27 |
| 23/06/2023 | Friday | 47 | 33 | 27 | 57 | 40 | 36 | 48 | 35 | 29 | 38 | 26 | 22 |
| 24/06/2023 | Saturday | 45 | 28 | 29 | 56 | 36 | 38 | 46 | 30 | 30 | 35 | 22 | 22 |
| 25/06/2023 | Sunday | 45 | 30 | 28 | 55 | 37 | 36 | 47 | 32 | 29 | 35 | 25 | 23 |
| 26/06/2023 | Monday | 46 | 28 | 28 | 58 | 36 | 35 | 47 | 31 | 28 | 37 | 22 | 23 |
| 27/06/2023 | Tuesday | 43 | 36 | 31 | 55 | 46 | 40 | 42 | 35 | 33 | 33 | 25 | 24 |
| 28/06/2023 | Wednesday | 44 | 36 | 38 | 55 | 43 | 45 | 45 | 38 | 40 | 36 | 30 | 32 |
| 29/06/2023 | Thursday | 47 | 35 | 32 | 57 | 43 | 38 | 47 | 37 | 33 | 39 | 29 | 26 |
| 30/06/2023 | Friday | 45 | 30 | 27 | 57 | 38 | 35 | 45 | 31 | 29 | 34 | 23 | 22 |
| 1/07/2023 | Saturday | 44 | 28 | 31 | 57 | 35 | 38 | 43 | 30 | 33 | 29 | 22 | 25 |
| **Average** | | **45** | **32** | **30** | **57** | **40** | **38** | **46** | **34** | **32** | **35** | **26** | **25** |

***Note***

— No noise data available

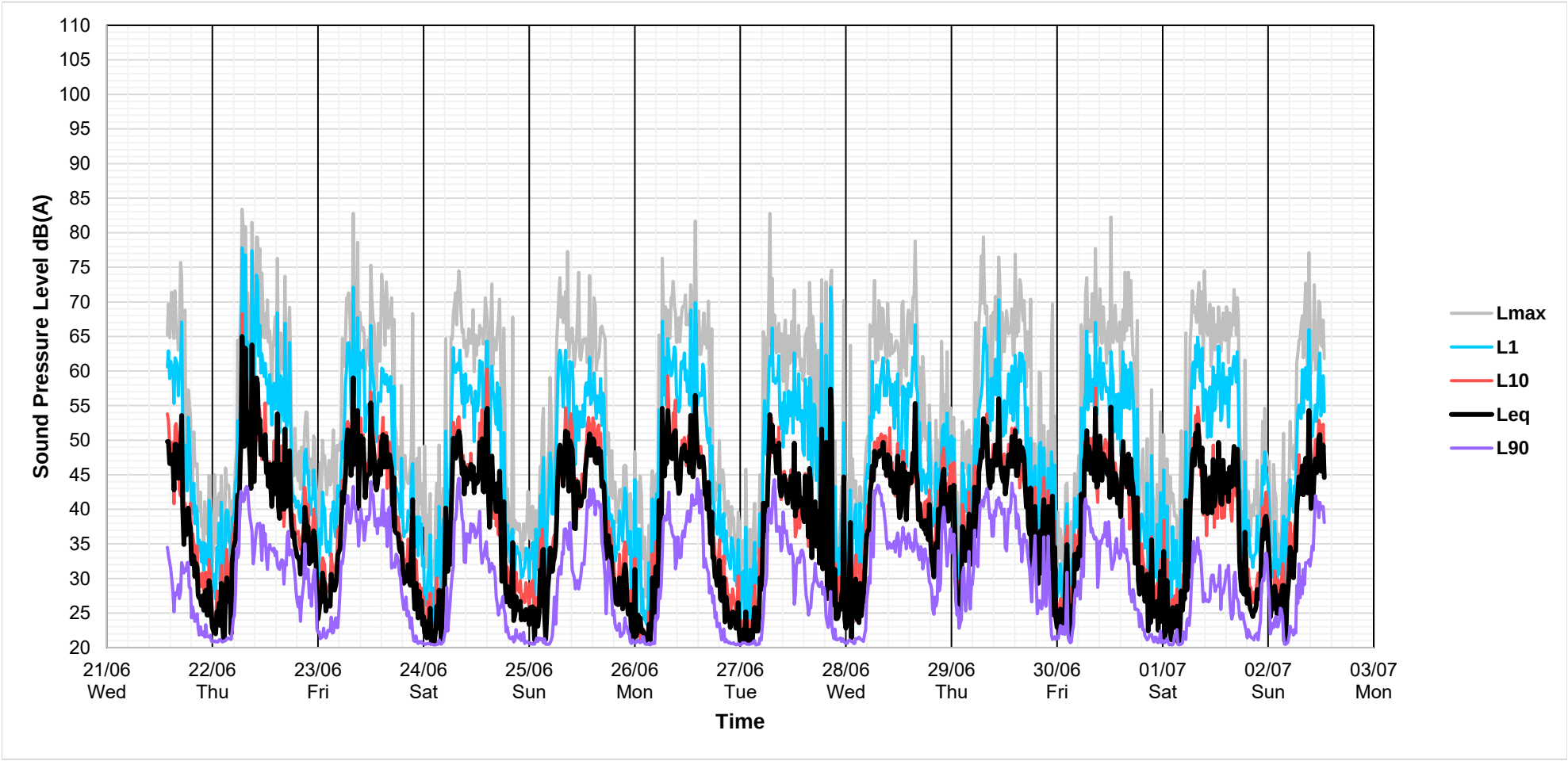
Day (D): 7:00am to 6:00pm

Evening (E): 6:00pm to 10:00pm

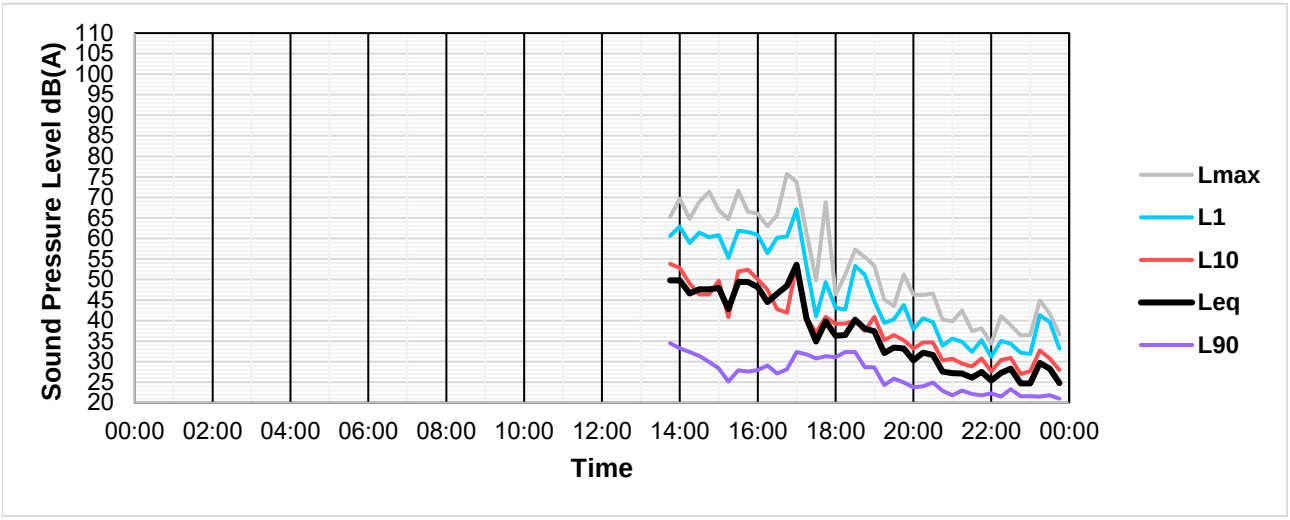
Night (N): 10:00pm to 7:00am

Rainfall recorded on this day

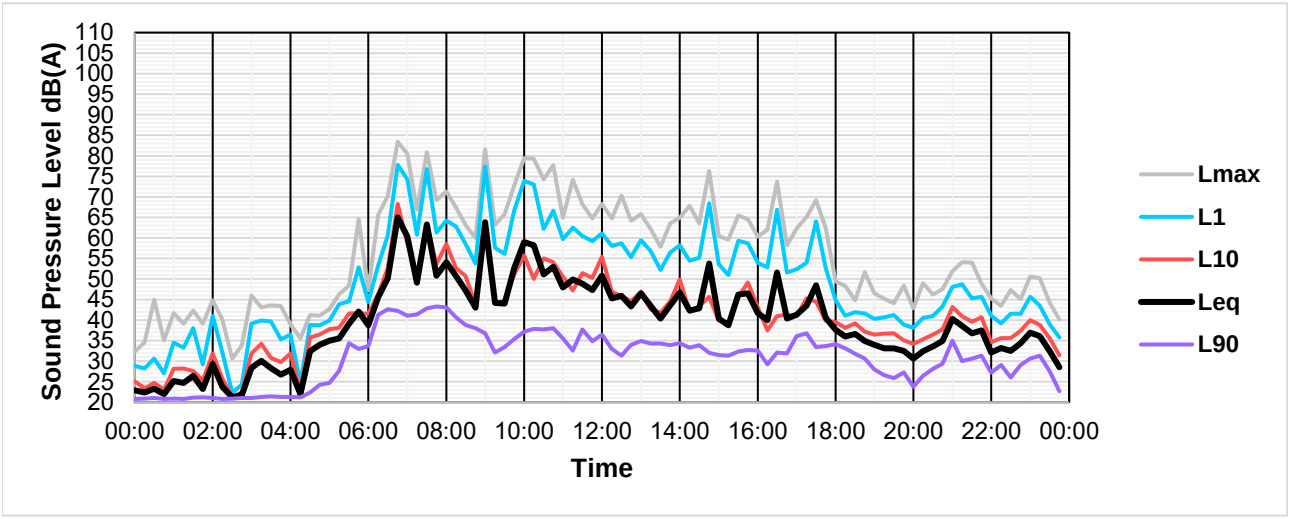
## Unattended Noise Measurements
## 21 June to 2 July 2023



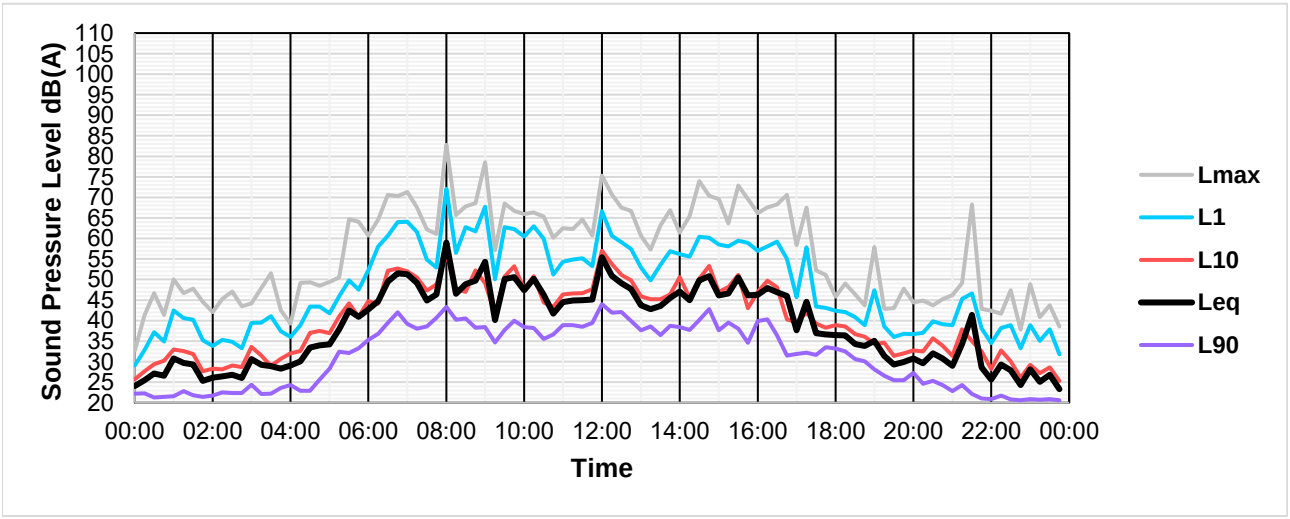
## Unattended Noise Measurements
## Wednesday 21 June 2023



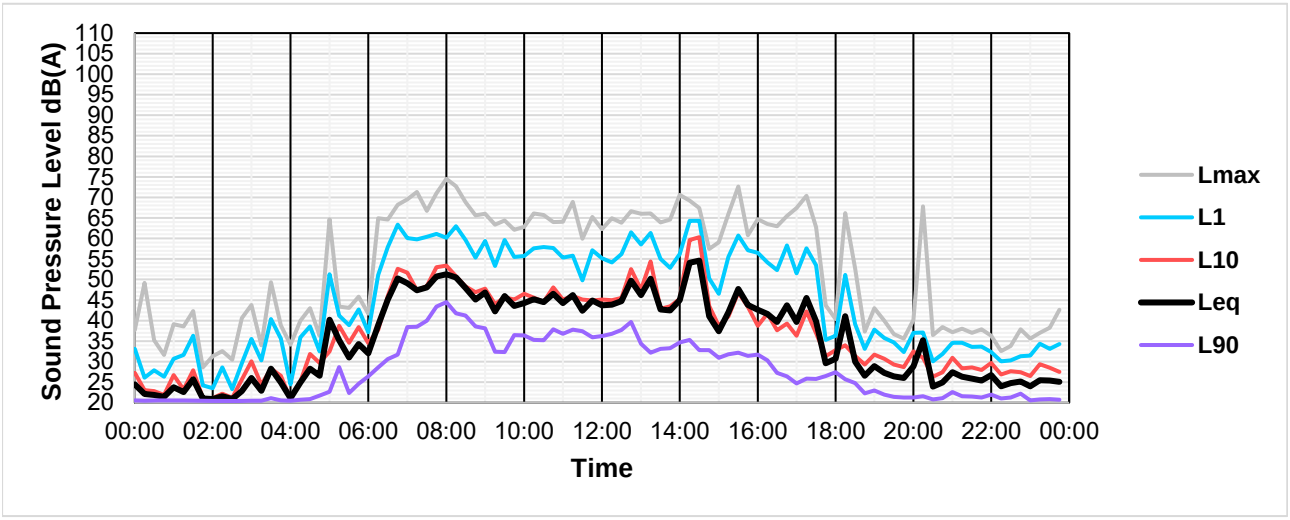

## Unattended Noise Measurements
## Thursday 22 June 2023



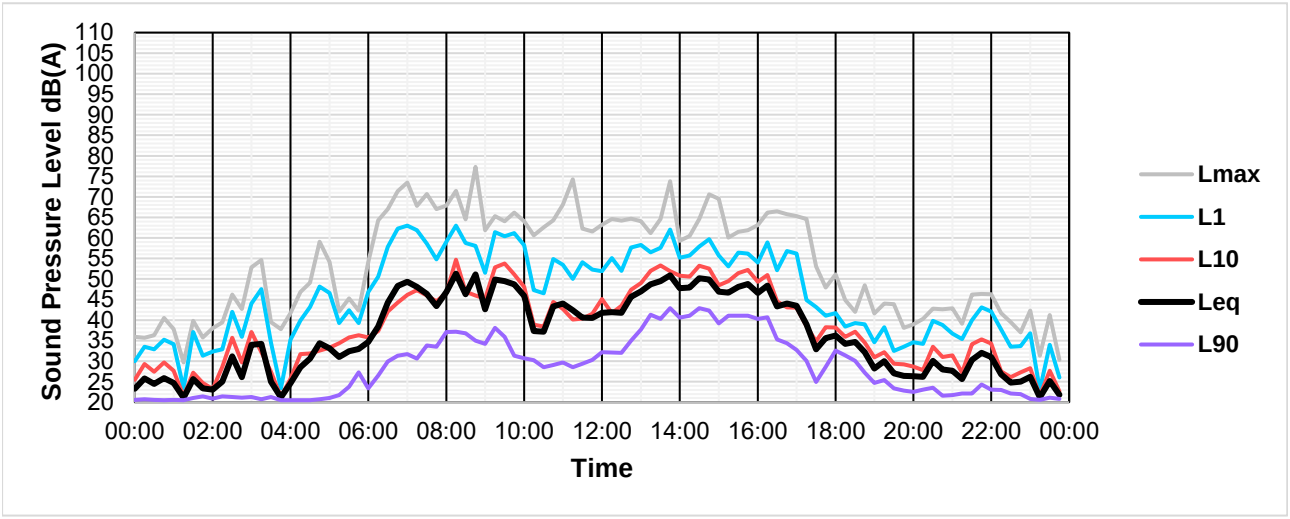

## Unattended Noise Measurements
## Friday 23 June 2023



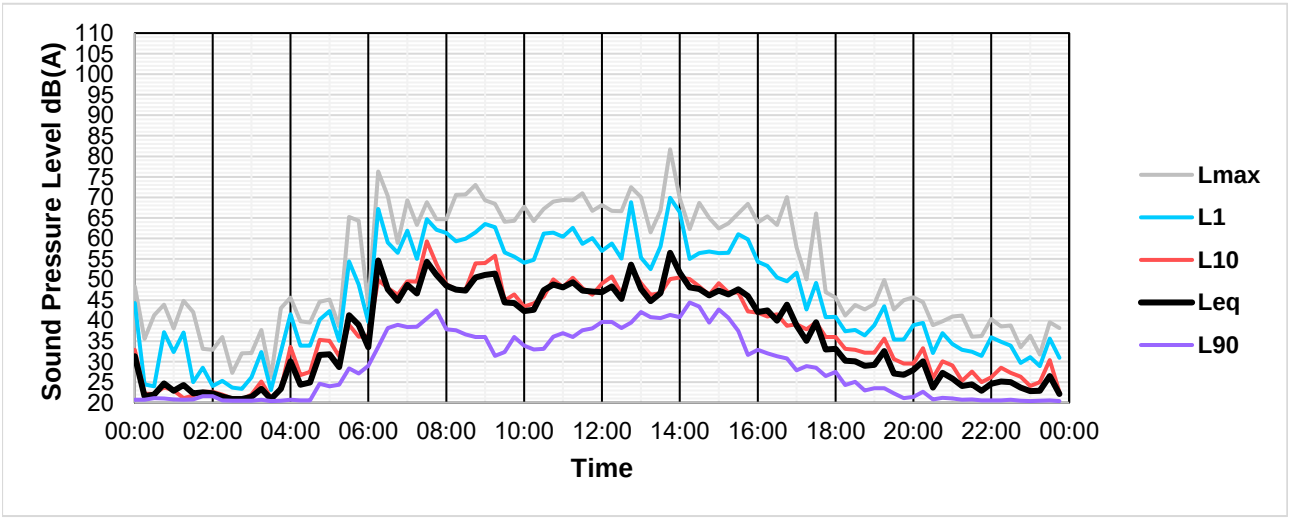
## Unattended Noise Measurements
## Saturday 24 June 2023



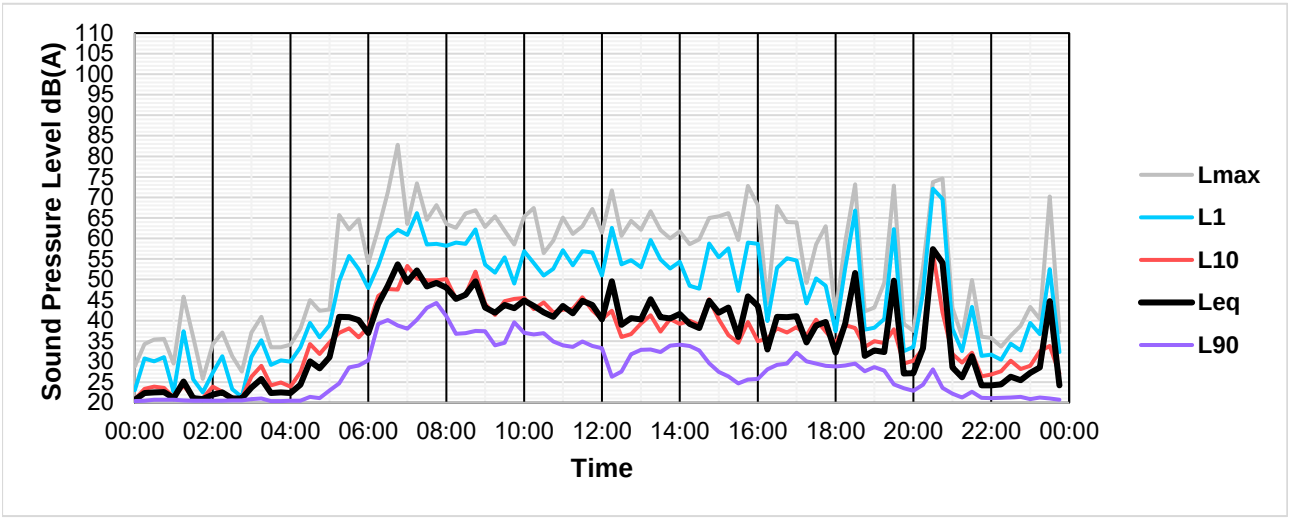

## Unattended Noise Measurements
## Sunday 25 June 2023



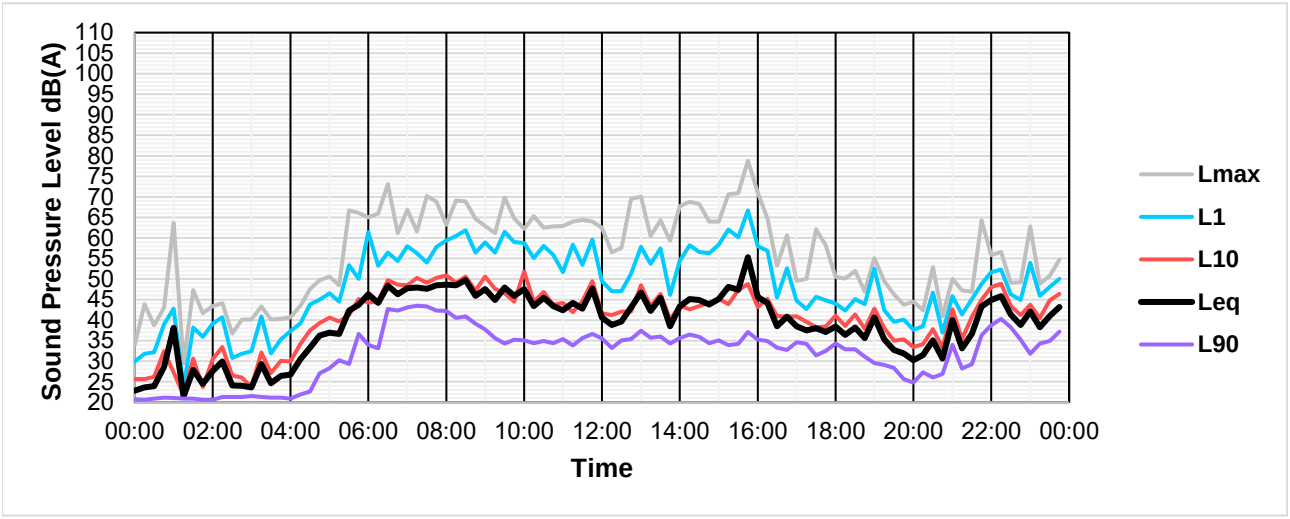

## Unattended Noise Measurements
## Monday 26 June 2023



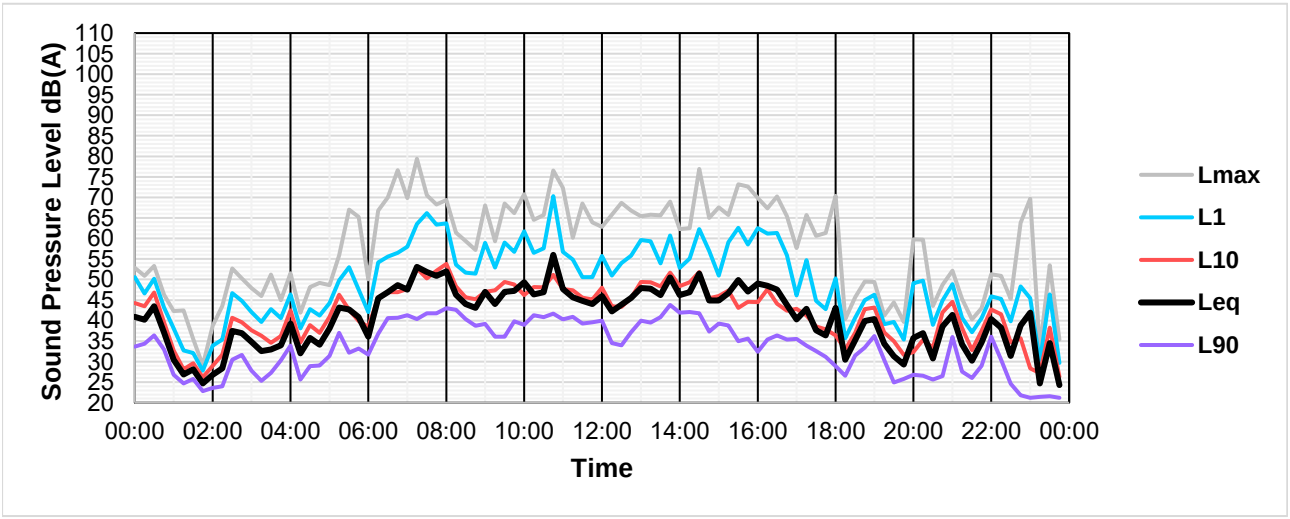
## Unattended Noise Measurements
## Tuesday 27 June 2023



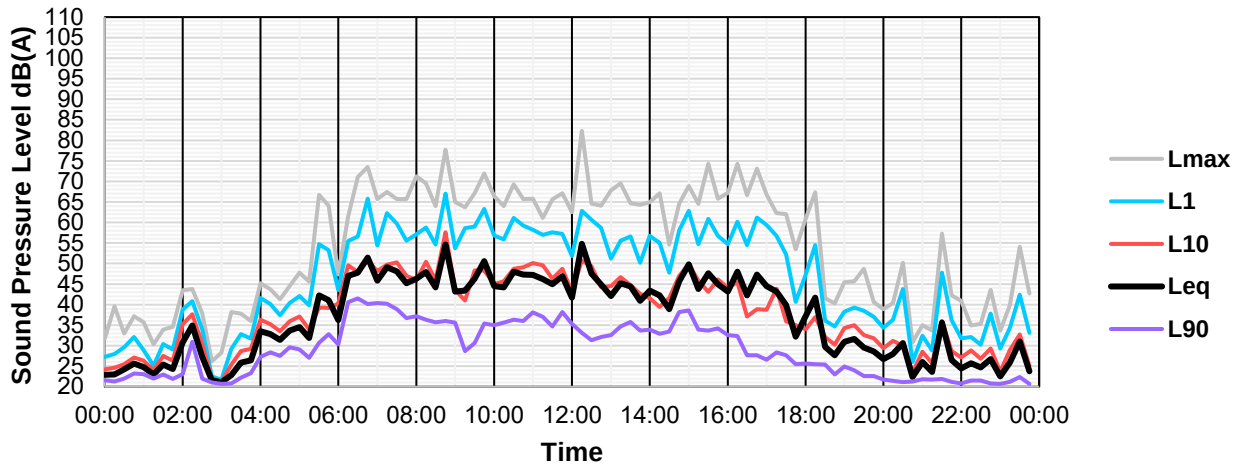

## Unattended Noise Measurements
## Wednesday 28 June 2023



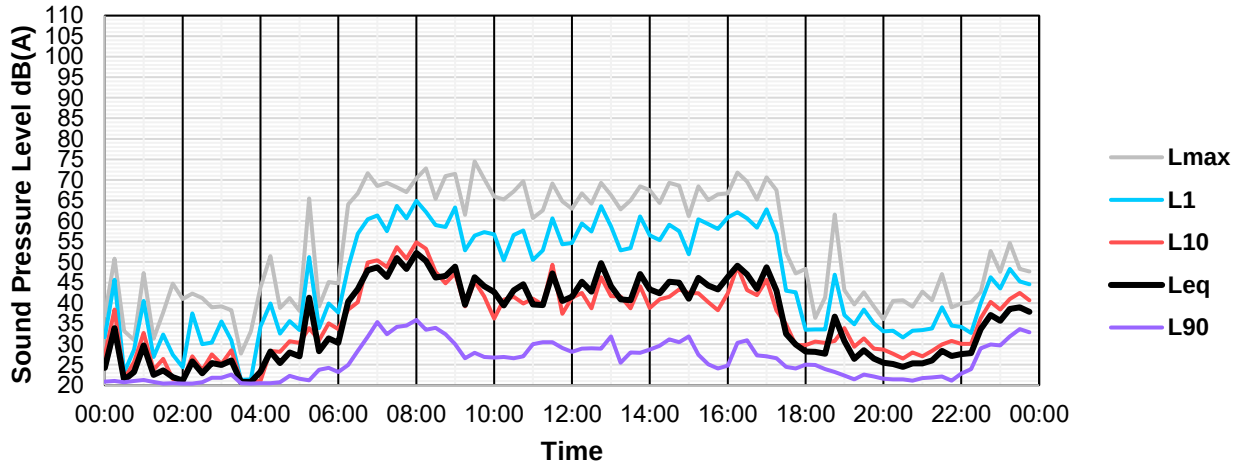

## Unattended Noise Measurements
## Thursday 29 June 2023



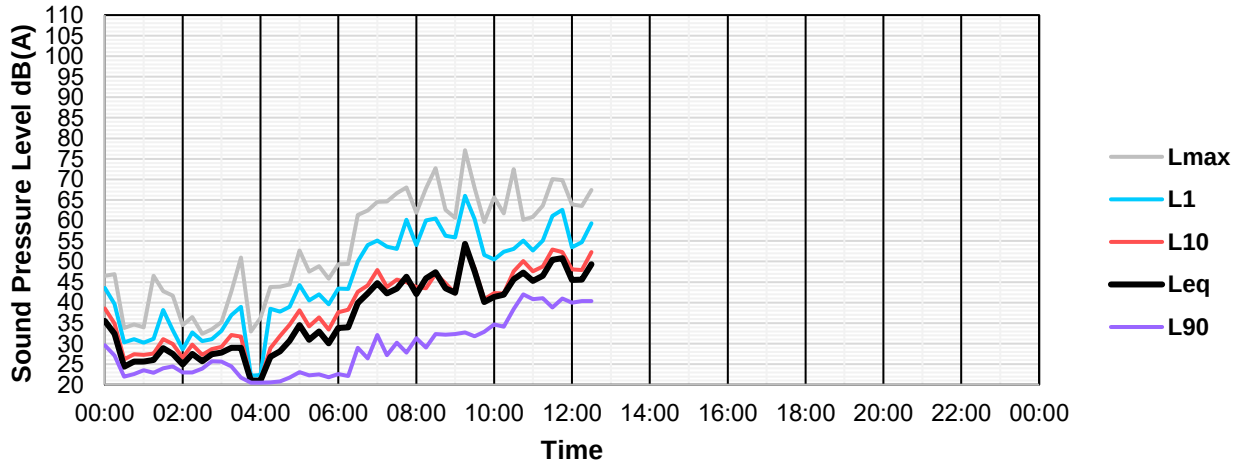
## Unattended Noise Measurements
## Friday 30 June 2023




## Unattended Noise Measurements
## Saturday 1 July 2023




## Unattended Noise Measurements
## Sunday 2 July 2023



# Appendix E – Operational Noise Level

# Boonenne Timbers
# ISO9613 Calculation Method
# Predicted Operational Noise Levels at Adjacent Uses
# From Activities at Proposed Development

**Legend**

| | | |
|---|---|---|
| Source | | Name of source |
| Source type | | Type of source (point, line, area) |
| time slice | | Name of time slice |
| Li | dB(A) | Level inside |
| R'w | dB | Rated transmission loss |
| L'w | dB(A) | Sound power per m, m² |
| Lw | dB(A) | Sound power per unit |
| l or A | m,m² | Size of source (Length or area) |
| KI | dB | Correction for source impulsiveness |
| KT | dB | Correction for source tonality |
| Ko | dB | Correction for propagation in limited spacial angle |
| S | m | Distance source - receiver |
| Adiv | dB | Mean attenuation due to geometrical spreading |
| Agr | dB | Mean attenuation due to ground effect |
| Abar | dB | Mean attenuation due to screening |
| Aatm | dB | Mean attenuation due to air absorption |
| Amisc | dB | Mean attenuation due to foliage, industrial areas and building areas |
| ADI | dB | Mean directivity correction |
| dLrefl | dB(A) | Level increase due to reflections |
| Ls | dB(A) | Unassessed sound pressure level at receiver Ls=Lw+Ko+ADI+Adiv+Agr+Abar+Aatm+Afol_site_house+Awind+dLrefl |
| dLw | dB | Correction due to source operation time |
| Cmet | dB | Meteorological correction |
| ZR | dB | Correction for rest periods |
| Lr | dB(A) | Assessed level of time slice |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Proposed Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | B(A | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Receiver 156 Boonenne Road Fl GF Dir S | Lr,lim dB(A) | Leq,15min 44 dB(A) | | | Lr,lim dB(A) | | Lr,lim dB(A) | | Lr,lim dB(A) | | Lr,lim dB(A) | | Leq,adj,1h dB(A) | | Leq,adj,1h 37 dB(A) | | Leq,adj,11 40 dB(A) | | Leq,adj,4h dB(A) | | Leq,adj,9h 28 dB(A) | | |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 331.31 | -61.4 | -1.3 | -4.0 | -4.6 | | 0.0 | 0.0 | 42.7 | -4.8 | 0.0 | 0.0 | 42.9 |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 331.31 | -61.4 | -1.3 | -4.0 | -4.6 | | 0.0 | 0.0 | 42.7 | | | | |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 331.31 | -61.4 | -1.3 | -4.0 | -4.6 | | 0.0 | 0.0 | 42.7 | | 0.0 | | |
| Chainsaw | Point | Leq,adj,11 | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 331.31 | -61.4 | -1.3 | -4.0 | -4.6 | | 0.0 | 0.0 | 42.7 | -10.4 | 0.0 | 0.0 | 37.3 |
| Chainsaw | Point | Leq,adj,4h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 331.31 | -61.4 | -1.3 | -4.0 | -4.6 | | 0.0 | 0.0 | 42.7 | | 0.0 | | |
| Chainsaw | Point | Leq,adj,9h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 331.31 | -61.4 | -1.3 | -4.0 | -4.6 | | 0.0 | 0.0 | 42.7 | | 0.0 | | |
| Circular Saw_1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 445.73 | -64.0 | -1.3 | -2.5 | -4.9 | | 0.0 | 0.0 | 26.7 | 0.0 | 0.0 | 0.0 | 31.7 |
| Circular Saw_1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 445.73 | -64.0 | -1.3 | -2.5 | -4.9 | | 0.0 | 0.0 | 26.7 | | | | |
| Circular Saw_1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 445.73 | -64.0 | -1.3 | -2.5 | -4.9 | | 0.0 | 0.0 | 26.7 | -3.0 | 0.0 | 0.0 | 28.7 |
| Circular Saw_1 | Point | Leq,adj,11 | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 445.73 | -64.0 | -1.3 | -2.5 | -4.9 | | 0.0 | 0.0 | 26.7 | -1.4 | 0.0 | 0.0 | 30.3 |
| Circular Saw_1 | Point | Leq,adj,4h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 445.73 | -64.0 | -1.3 | -2.5 | -4.9 | | 0.0 | 0.0 | 26.7 | | 0.0 | | |
| Circular Saw_1 | Point | Leq,adj,9h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 445.73 | -64.0 | -1.3 | -2.5 | -4.9 | | 0.0 | 0.0 | 26.7 | -12.6 | 0.0 | 0.0 | 19.1 |
| Circular Saw_2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 442.66 | -63.9 | -1.3 | -3.1 | -4.6 | | 0.0 | 0.0 | 26.4 | 0.0 | 0.0 | 0.0 | 31.4 |
| Circular Saw_2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 442.66 | -63.9 | -1.3 | -3.1 | -4.6 | | 0.0 | 0.0 | 26.4 | | | | |
| Circular Saw_2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 442.66 | -63.9 | -1.3 | -3.1 | -4.6 | | 0.0 | 0.0 | 26.4 | -3.0 | 0.0 | 0.0 | 28.4 |
| Circular Saw_2 | Point | Leq,adj,11 | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 442.66 | -63.9 | -1.3 | -3.1 | -4.6 | | 0.0 | 0.0 | 26.4 | -1.4 | 0.0 | 0.0 | 30.0 |
| Circular Saw_2 | Point | Leq,adj,4h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 442.66 | -63.9 | -1.3 | -3.1 | -4.6 | | 0.0 | 0.0 | 26.4 | | 0.0 | | |
| Circular Saw_2 | Point | Leq,adj,9h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 442.66 | -63.9 | -1.3 | -3.1 | -4.6 | | 0.0 | 0.0 | 26.4 | -12.6 | 0.0 | 0.0 | 18.9 |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.4 | 88.3 | 487.2 | 0.0 | 5.0 | 0 | 448.28 | -64.0 | -0.1 | -3.3 | -1.4 | | 0.0 | 0.0 | 19.4 | 0.0 | 0.0 | 0.0 | 24.4 |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.4 | 88.3 | 487.2 | 0.0 | 5.0 | 0 | 448.28 | -64.0 | -0.1 | -3.3 | -1.4 | | 0.0 | 0.0 | 19.4 | | | | |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.4 | 88.3 | 487.2 | 0.0 | 5.0 | 0 | 448.28 | -64.0 | -0.1 | -3.3 | -1.4 | | 0.0 | 0.0 | 19.4 | 0.0 | 0.0 | 0.0 | 24.4 |
| Conveyor Belt | Area | Leq,adj,11 | | | 61.4 | 88.3 | 487.2 | 0.0 | 5.0 | 0 | 448.28 | -64.0 | -0.1 | -3.3 | -1.4 | | 0.0 | 0.0 | 19.4 | -1.4 | 0.0 | 0.0 | 23.1 |
| Conveyor Belt | Area | Leq,adj,4h | | | 61.4 | 88.3 | 487.2 | 0.0 | 5.0 | 0 | 448.28 | -64.0 | -0.1 | -3.3 | -1.4 | | 0.0 | 0.0 | 19.4 | | 0.0 | | |
| Conveyor Belt | Area | Leq,adj,9h | | | 61.4 | 88.3 | 487.2 | 0.0 | 5.0 | 0 | 448.28 | -64.0 | -0.1 | -3.3 | -1.4 | | 0.0 | 0.0 | 19.4 | -9.5 | 0.0 | 0.0 | 14.9 |
| Forklift_North | Area | Leq,adj,1h | | | 63.2 | 92.0 | 768.7 | 0.0 | 5.0 | 0 | 299.98 | -60.5 | -1.2 | -4.0 | -4.3 | | 0.0 | 0.0 | 22.0 | 0.0 | 0.0 | 0.0 | 27.0 |
| Forklift_North | Area | Leq,adj,1h | | | 63.2 | 92.0 | 768.7 | 0.0 | 5.0 | 0 | 299.98 | -60.5 | -1.2 | -4.0 | -4.3 | | 0.0 | 0.0 | 22.0 | | | | |
| Forklift_North | Area | Leq,adj,1h | | | 63.2 | 92.0 | 768.7 | 0.0 | 5.0 | 0 | 299.98 | -60.5 | -1.2 | -4.0 | -4.3 | | 0.0 | 0.0 | 22.0 | 0.0 | 0.0 | 0.0 | 27.0 |
| Forklift_North | Area | Leq,adj,11 | | | 63.2 | 92.0 | 768.7 | 0.0 | 5.0 | 0 | 299.98 | -60.5 | -1.2 | -4.0 | -4.3 | | 0.0 | 0.0 | 22.0 | -1.4 | 0.0 | 0.0 | 25.6 |
| Forklift_North | Area | Leq,adj,4h | | | 63.2 | 92.0 | 768.7 | 0.0 | 5.0 | 0 | 299.98 | -60.5 | -1.2 | -4.0 | -4.3 | | 0.0 | 0.0 | 22.0 | | 0.0 | | |
| Forklift_North | Area | Leq,adj,9h | | | 63.2 | 92.0 | 768.7 | 0.0 | 5.0 | 0 | 299.98 | -60.5 | -1.2 | -4.0 | -4.3 | | 0.0 | 0.0 | 22.0 | -9.5 | 0.0 | 0.0 | 17.5 |
| Forklift_South | Area | Leq,adj,1h | | | 59.7 | 92.0 | 1721.7 | 0.0 | 5.0 | 0 | 396.82 | -63.0 | -1.3 | -3.4 | -5.4 | | 0.0 | 0.0 | 18.9 | 0.0 | 0.0 | 0.0 | 23.9 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Proposed Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | B(A | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Forklift_South | Area | Leq,adj,1h | | | 59.7 | 92.0 | 1721.7 | 0.0 | 5.0 | 0 | 396.82 | -63.0 | -1.3 | -3.4 | -5.4 | | 0.0 | 0.0 | 18.9 | | | | |
| Forklift_South | Area | Leq,adj,1h | | | 59.7 | 92.0 | 1721.7 | 0.0 | 5.0 | 0 | 396.82 | -63.0 | -1.3 | -3.4 | -5.4 | | 0.0 | 0.0 | 18.9 | 0.0 | 0.0 | 0.0 | 23.9 |
| Forklift_South | Area | Leq,adj,11 | | | 59.7 | 92.0 | 1721.7 | 0.0 | 5.0 | 0 | 396.82 | -63.0 | -1.3 | -3.4 | -5.4 | | 0.0 | 0.0 | 18.9 | -1.4 | 0.0 | 0.0 | 22.5 |
| Forklift_South | Area | Leq,adj,4h | | | 59.7 | 92.0 | 1721.7 | 0.0 | 5.0 | 0 | 396.82 | -63.0 | -1.3 | -3.4 | -5.4 | | 0.0 | 0.0 | 18.9 | | 0.0 | | |
| Forklift_South | Area | Leq,adj,9h | | | 59.7 | 92.0 | 1721.7 | 0.0 | 5.0 | 0 | 396.82 | -63.0 | -1.3 | -3.4 | -5.4 | | 0.0 | 0.0 | 18.9 | -9.5 | 0.0 | 0.0 | 14.4 |
| North Flexi Wall-Breakout North Flexishield | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 451.77 | -64.1 | -4.8 | -1.8 | -0.8 | | 0.0 | 0.0 | 14.2 | 0.0 | 0.0 | 0.0 | 14.2 |
| North Flexi Wall-Breakout North Flexishield | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 451.77 | -64.1 | -4.8 | -1.8 | -0.8 | | 0.0 | 0.0 | 14.2 | | | | |
| North Flexi Wall-Breakout North Flexishield | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 451.77 | -64.1 | -4.8 | -1.8 | -0.8 | | 0.0 | 0.0 | 14.2 | -3.0 | 0.0 | 0.0 | 11.2 |
| North Flexi Wall-Breakout North Flexishield | Area | Leq,adj,11 | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 451.77 | -64.1 | -4.8 | -1.8 | -0.8 | | 0.0 | 0.0 | 14.2 | -1.4 | 0.0 | 0.0 | 12.8 |
| North Flexi Wall-Breakout North Flexishield | Area | Leq,adj,4h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 451.77 | -64.1 | -4.8 | -1.8 | -0.8 | | 0.0 | 0.0 | 14.2 | | 0.0 | | |
| North Flexi Wall-Breakout North Flexishield | Area | Leq,adj,9h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 451.77 | -64.1 | -4.8 | -1.8 | -0.8 | | 0.0 | 0.0 | 14.2 | -12.6 | 0.0 | 0.0 | 1.6 |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 453.48 | -64.1 | -2.5 | -12.8 | -0.8 | | 0.0 | 7.7 | 27.7 | 0.0 | 0.0 | 0.0 | 32.7 |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 453.48 | -64.1 | -2.5 | -12.8 | -0.8 | | 0.0 | 7.7 | 27.7 | | | | |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 453.48 | -64.1 | -2.5 | -12.8 | -0.8 | | 0.0 | 7.7 | 27.7 | -3.0 | 0.0 | 0.0 | 29.7 |
| Shredder Breakout | Point | Leq,adj,11 | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 453.48 | -64.1 | -2.5 | -12.8 | -0.8 | | 0.0 | 7.7 | 27.7 | -1.4 | 0.0 | 0.0 | 31.3 |
| Shredder Breakout | Point | Leq,adj,4h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 453.48 | -64.1 | -2.5 | -12.8 | -0.8 | | 0.0 | 7.7 | 27.7 | | 0.0 | | |
| Shredder Breakout | Point | Leq,adj,9h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 453.48 | -64.1 | -2.5 | -12.8 | -0.8 | | 0.0 | 7.7 | 27.7 | -12.6 | 0.0 | 0.0 | 20.1 |
| Shredder Shed_Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 453.71 | -64.1 | -4.5 | -2.3 | -0.5 | | 0.0 | 0.2 | 22.8 | 0.0 | 0.0 | 0.0 | 27.8 |
| Shredder Shed_Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 453.71 | -64.1 | -4.5 | -2.3 | -0.5 | | 0.0 | 0.2 | 22.8 | | | | |
| Shredder Shed_Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 453.71 | -64.1 | -4.5 | -2.3 | -0.5 | | 0.0 | 0.2 | 22.8 | 0.0 | 0.0 | 0.0 | 27.8 |
| Shredder Shed_Eastern Facade | Area | Leq,adj,11 | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 453.71 | -64.1 | -4.5 | -2.3 | -0.5 | | 0.0 | 0.2 | 22.8 | -1.4 | 0.0 | 0.0 | 26.4 |
| Shredder Shed_Eastern Facade | Area | Leq,adj,4h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 453.71 | -64.1 | -4.5 | -2.3 | -0.5 | | 0.0 | 0.2 | 22.8 | | 0.0 | | |
| Shredder Shed_Eastern Facade | Area | Leq,adj,9h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 453.71 | -64.1 | -4.5 | -2.3 | -0.5 | | 0.0 | 0.2 | 22.8 | -9.5 | 0.0 | 0.0 | 18.3 |
| Shredder Shed_Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 5.0 | 0.0 | 3 | 451.38 | -64.1 | -4.5 | -1.7 | -0.6 | | 0.0 | 0.0 | 22.0 | 0.0 | 0.0 | 0.0 | 27.0 |
| Shredder Shed_Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 5.0 | 0.0 | 3 | 451.38 | -64.1 | -4.5 | -1.7 | -0.6 | | 0.0 | 0.0 | 22.0 | | | | |
| Shredder Shed_Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 5.0 | 0.0 | 3 | 451.38 | -64.1 | -4.5 | -1.7 | -0.6 | | 0.0 | 0.0 | 22.0 | 0.0 | 0.0 | 0.0 | 27.0 |
| Shredder Shed_Northern Facade | Area | Leq,adj,11 | | | 78.7 | 89.9 | 13.1 | 5.0 | 0.0 | 3 | 451.38 | -64.1 | -4.5 | -1.7 | -0.6 | | 0.0 | 0.0 | 22.0 | -1.4 | 0.0 | 0.0 | 25.6 |
| Shredder Shed_Northern Facade | Area | Leq,adj,4h | | | 78.7 | 89.9 | 13.1 | 5.0 | 0.0 | 3 | 451.38 | -64.1 | -4.5 | -1.7 | -0.6 | | 0.0 | 0.0 | 22.0 | | 0.0 | | |
| Shredder Shed_Northern Facade | Area | Leq,adj,9h | | | 78.7 | 89.9 | 13.1 | 5.0 | 0.0 | 3 | 451.38 | -64.1 | -4.5 | -1.7 | -0.6 | | 0.0 | 0.0 | 22.0 | -9.5 | 0.0 | 0.0 | 17.4 |
| Shredder Shed_Roof | Area | Leq,adj,1h | | | 78.7 | 92.6 | 24.7 | 5.0 | 0.0 | 0 | 454.09 | -64.1 | -3.9 | -1.6 | -0.6 | | 0.0 | 0.0 | 22.4 | 0.0 | 0.0 | 0.0 | 27.4 |
| Shredder Shed_Roof | Area | Leq,adj,1h | | | 78.7 | 92.6 | 24.7 | 5.0 | 0.0 | 0 | 454.09 | -64.1 | -3.9 | -1.6 | -0.6 | | 0.0 | 0.0 | 22.4 | | | | |
| Shredder Shed_Roof | Area | Leq,adj,1h | | | 78.7 | 92.6 | 24.7 | 5.0 | 0.0 | 0 | 454.09 | -64.1 | -3.9 | -1.6 | -0.6 | | 0.0 | 0.0 | 22.4 | 0.0 | 0.0 | 0.0 | 27.4 |
| Shredder Shed_Roof | Area | Leq,adj,11 | | | 78.7 | 92.6 | 24.7 | 5.0 | 0.0 | 0 | 454.09 | -64.1 | -3.9 | -1.6 | -0.6 | | 0.0 | 0.0 | 22.4 | -1.4 | 0.0 | 0.0 | 26.0 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Proposed Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | B(A | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Shredder Shed_Roof | Area | Leq,adj,4h | | | 78.7 | 92.6 | 24.7 | 5.0 | 0.0 | 0 | 454.09 | -64.1 | -3.9 | -1.6 | -0.6 | | 0.0 | 0.0 | 22.4 | | 0.0 | | |
| Shredder Shed_Roof | Area | Leq,adj,9h | | | 78.7 | 92.6 | 24.7 | 5.0 | 0.0 | 0 | 454.09 | -64.1 | -3.9 | -1.6 | -0.6 | | 0.0 | 0.0 | 22.4 | -9.5 | 0.0 | 0.0 | 17.8 |
| Shredder Shed_Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 454.58 | -64.1 | -4.6 | -7.4 | -0.3 | | 0.0 | 0.0 | 17.6 | 0.0 | 0.0 | 0.0 | 22.6 |
| Shredder Shed_Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 454.58 | -64.1 | -4.6 | -7.4 | -0.3 | | 0.0 | 0.0 | 17.6 | | | | |
| Shredder Shed_Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 454.58 | -64.1 | -4.6 | -7.4 | -0.3 | | 0.0 | 0.0 | 17.6 | 0.0 | 0.0 | 0.0 | 22.6 |
| Shredder Shed_Western Facade | Area | Leq,adj,11 | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 454.58 | -64.1 | -4.6 | -7.4 | -0.3 | | 0.0 | 0.0 | 17.6 | -1.4 | 0.0 | 0.0 | 21.2 |
| Shredder Shed_Western Facade | Area | Leq,adj,4h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 454.58 | -64.1 | -4.6 | -7.4 | -0.3 | | 0.0 | 0.0 | 17.6 | | 0.0 | | |
| Shredder Shed_Western Facade | Area | Leq,adj,9h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 454.58 | -64.1 | -4.6 | -7.4 | -0.3 | | 0.0 | 0.0 | 17.6 | -9.5 | 0.0 | 0.0 | 13.1 |
| Shredderr Shed_Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.0 | 5.0 | 0.0 | 3 | 456.93 | -64.2 | -4.6 | -7.3 | -0.2 | | 0.0 | 0.0 | 16.6 | 0.0 | 0.0 | 0.0 | 21.6 |
| Shredderr Shed_Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.0 | 5.0 | 0.0 | 3 | 456.93 | -64.2 | -4.6 | -7.3 | -0.2 | | 0.0 | 0.0 | 16.6 | | | | |
| Shredderr Shed_Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.0 | 5.0 | 0.0 | 3 | 456.93 | -64.2 | -4.6 | -7.3 | -0.2 | | 0.0 | 0.0 | 16.6 | 0.0 | 0.0 | 0.0 | 21.6 |
| Shredderr Shed_Southern Facade | Area | Leq,adj,11 | | | 78.7 | 89.9 | 13.0 | 5.0 | 0.0 | 3 | 456.93 | -64.2 | -4.6 | -7.3 | -0.2 | | 0.0 | 0.0 | 16.6 | -1.4 | 0.0 | 0.0 | 20.2 |
| Shredderr Shed_Southern Facade | Area | Leq,adj,4h | | | 78.7 | 89.9 | 13.0 | 5.0 | 0.0 | 3 | 456.93 | -64.2 | -4.6 | -7.3 | -0.2 | | 0.0 | 0.0 | 16.6 | | 0.0 | | |
| Shredderr Shed_Southern Facade | Area | Leq,adj,9h | | | 78.7 | 89.9 | 13.0 | 5.0 | 0.0 | 3 | 456.93 | -64.2 | -4.6 | -7.3 | -0.2 | | 0.0 | 0.0 | 16.6 | -9.5 | 0.0 | 0.0 | 12.1 |
| South Flexishield-Breakout South Flexishield | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 455.17 | -64.2 | -4.8 | -7.7 | -0.3 | | 0.0 | 0.0 | 8.6 | 0.0 | 0.0 | 0.0 | 8.6 |
| South Flexishield-Breakout South Flexishield | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 455.17 | -64.2 | -4.8 | -7.7 | -0.3 | | 0.0 | 0.0 | 8.6 | | | | |
| South Flexishield-Breakout South Flexishield | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 455.17 | -64.2 | -4.8 | -7.7 | -0.3 | | 0.0 | 0.0 | 8.6 | -3.0 | 0.0 | 0.0 | 5.6 |
| South Flexishield-Breakout South Flexishield | Area | Leq,adj,11 | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 455.17 | -64.2 | -4.8 | -7.7 | -0.3 | | 0.0 | 0.0 | 8.6 | -1.4 | 0.0 | 0.0 | 7.2 |
| South Flexishield-Breakout South Flexishield | Area | Leq,adj,4h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 455.17 | -64.2 | -4.8 | -7.7 | -0.3 | | 0.0 | 0.0 | 8.6 | | 0.0 | | |
| South Flexishield-Breakout South Flexishield | Area | Leq,adj,9h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 455.17 | -64.2 | -4.8 | -7.7 | -0.3 | | 0.0 | 0.0 | 8.6 | -12.6 | 0.0 | 0.0 | -3.9 |
| Truck movements | Line | Leq,adj,1h | | | 42.9 | 70.7 | 605.6 | 0.0 | 5.0 | 0 | 286.64 | -60.1 | -2.6 | -1.8 | -1.3 | | 0.0 | 0.0 | 4.8 | 0.0 | 0.0 | 0.0 | 9.8 |
| Truck movements | Line | Leq,adj,1h | | | 42.9 | 70.7 | 605.6 | 0.0 | 5.0 | 0 | 286.64 | -60.1 | -2.6 | -1.8 | -1.3 | | 0.0 | 0.0 | 4.8 | | | | |
| Truck movements | Line | Leq,adj,1h | | | 42.9 | 70.7 | 605.6 | 0.0 | 5.0 | 0 | 286.64 | -60.1 | -2.6 | -1.8 | -1.3 | | 0.0 | 0.0 | 4.8 | 0.0 | 0.0 | 0.0 | 9.8 |
| Truck movements | Line | Leq,adj,11 | | | 42.9 | 70.7 | 605.6 | 0.0 | 5.0 | 0 | 286.64 | -60.1 | -2.6 | -1.8 | -1.3 | | 0.0 | 0.0 | 4.8 | -1.4 | 0.0 | 0.0 | 8.5 |
| Truck movements | Line | Leq,adj,4h | | | 42.9 | 70.7 | 605.6 | 0.0 | 5.0 | 0 | 286.64 | -60.1 | -2.6 | -1.8 | -1.3 | | 0.0 | 0.0 | 4.8 | | 0.0 | | |
| Truck movements | Line | Leq,adj,9h | | | 42.9 | 70.7 | 605.6 | 0.0 | 5.0 | 0 | 286.64 | -60.1 | -2.6 | -1.8 | -1.3 | | 0.0 | 0.0 | 4.8 | -9.5 | 0.0 | 0.0 | 0.3 |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 422.73 | -63.5 | -2.6 | 0.0 | -2.6 | | 0.0 | 0.0 | 14.5 | -3.0 | 0.0 | 0.0 | 11.5 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Proposed Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | B(A | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 422.73 | -63.5 | -2.6 | 0.0 | -2.6 | | 0.0 | 0.0 | 14.5 | | | | |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 422.73 | -63.5 | -2.6 | 0.0 | -2.6 | | 0.0 | 0.0 | 14.5 | 0.0 | 0.0 | 0.0 | 14.5 |
| Carpark | PLot | Leq,adj,11 | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 422.73 | -63.5 | -2.6 | 0.0 | -2.6 | | 0.0 | 0.0 | 14.5 | -3.0 | 0.0 | 0.0 | 11.5 |
| Carpark | PLot | Leq,adj,4h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 422.73 | -63.5 | -2.6 | 0.0 | -2.6 | | 0.0 | 0.0 | 14.5 | | 0.0 | | |
| Carpark | PLot | Leq,adj,9h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 422.73 | -63.5 | -2.6 | 0.0 | -2.6 | | 0.0 | 0.0 | 14.5 | -9.5 | 0.0 | 0.0 | 4.9 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Proposed Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | B(A | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Receiver 169 Boonenne Road Fl GF Dir N | Lr,lim dB(A) | Leq,15min 39 dB(A) | | | Lr,lim dB(A) | | Lr,lim dB(A) | Lr,lim dB(A) | | Lr,lim dB(A) | | Leq,adj,1h dB(A) | | Leq,adj,1h 35 dB(A) | | | Leq,adj,11 36 dB(A) | | Leq,adj,4h dB(A) | | Leq,adj,9h 26 dB(A) | | |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 625.14 | -66.9 | -1.4 | -4.1 | -6.7 | | 0.0 | 0.0 | 34.9 | -4.8 | 0.0 | 0.0 | 35.1 |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 625.14 | -66.9 | -1.4 | -4.1 | -6.7 | | 0.0 | 0.0 | 34.9 | | | | |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 625.14 | -66.9 | -1.4 | -4.1 | -6.7 | | 0.0 | 0.0 | 34.9 | | 0.0 | | |
| Chainsaw | Point | Leq,adj,11 | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 625.14 | -66.9 | -1.4 | -4.1 | -6.7 | | 0.0 | 0.0 | 34.9 | -10.4 | 0.0 | 0.0 | 29.5 |
| Chainsaw | Point | Leq,adj,4h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 625.14 | -66.9 | -1.4 | -4.1 | -6.7 | | 0.0 | 0.0 | 34.9 | | 0.0 | | |
| Chainsaw | Point | Leq,adj,9h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 625.14 | -66.9 | -1.4 | -4.1 | -6.7 | | 0.0 | 0.0 | 34.9 | | 0.0 | | |
| Circular Saw_1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 510.11 | -65.1 | -1.3 | -4.0 | -4.8 | | 0.0 | 0.0 | 24.1 | 0.0 | 0.0 | 0.0 | 29.1 |
| Circular Saw_1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 510.11 | -65.1 | -1.3 | -4.0 | -4.8 | | 0.0 | 0.0 | 24.1 | | | | |
| Circular Saw_1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 510.11 | -65.1 | -1.3 | -4.0 | -4.8 | | 0.0 | 0.0 | 24.1 | -3.0 | 0.0 | 0.0 | 26.1 |
| Circular Saw_1 | Point | Leq,adj,11 | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 510.11 | -65.1 | -1.3 | -4.0 | -4.8 | | 0.0 | 0.0 | 24.1 | -1.4 | 0.0 | 0.0 | 27.7 |
| Circular Saw_1 | Point | Leq,adj,4h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 510.11 | -65.1 | -1.3 | -4.0 | -4.8 | | 0.0 | 0.0 | 24.1 | | 0.0 | | |
| Circular Saw_1 | Point | Leq,adj,9h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 510.11 | -65.1 | -1.3 | -4.0 | -4.8 | | 0.0 | 0.0 | 24.1 | -12.6 | 0.0 | 0.0 | 16.5 |
| Circular Saw_2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 512.83 | -65.2 | -1.3 | -4.0 | -4.8 | | 0.0 | 0.0 | 24.0 | 0.0 | 0.0 | 0.0 | 29.0 |
| Circular Saw_2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 512.83 | -65.2 | -1.3 | -4.0 | -4.8 | | 0.0 | 0.0 | 24.0 | | | | |
| Circular Saw_2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 512.83 | -65.2 | -1.3 | -4.0 | -4.8 | | 0.0 | 0.0 | 24.0 | -3.0 | 0.0 | 0.0 | 26.0 |
| Circular Saw_2 | Point | Leq,adj,11 | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 512.83 | -65.2 | -1.3 | -4.0 | -4.8 | | 0.0 | 0.0 | 24.0 | -1.4 | 0.0 | 0.0 | 27.6 |
| Circular Saw_2 | Point | Leq,adj,4h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 512.83 | -65.2 | -1.3 | -4.0 | -4.8 | | 0.0 | 0.0 | 24.0 | | 0.0 | | |
| Circular Saw_2 | Point | Leq,adj,9h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 512.83 | -65.2 | -1.3 | -4.0 | -4.8 | | 0.0 | 0.0 | 24.0 | -12.6 | 0.0 | 0.0 | 16.5 |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.4 | 88.3 | 487.2 | 0.0 | 5.0 | 0 | 507.22 | -65.1 | -0.1 | -4.1 | -1.3 | | 0.0 | 0.0 | 17.7 | 0.0 | 0.0 | 0.0 | 22.7 |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.4 | 88.3 | 487.2 | 0.0 | 5.0 | 0 | 507.22 | -65.1 | -0.1 | -4.1 | -1.3 | | 0.0 | 0.0 | 17.7 | | | | |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.4 | 88.3 | 487.2 | 0.0 | 5.0 | 0 | 507.22 | -65.1 | -0.1 | -4.1 | -1.3 | | 0.0 | 0.0 | 17.7 | 0.0 | 0.0 | 0.0 | 22.7 |
| Conveyor Belt | Area | Leq,adj,11 | | | 61.4 | 88.3 | 487.2 | 0.0 | 5.0 | 0 | 507.22 | -65.1 | -0.1 | -4.1 | -1.3 | | 0.0 | 0.0 | 17.7 | -1.4 | 0.0 | 0.0 | 21.3 |
| Conveyor Belt | Area | Leq,adj,4h | | | 61.4 | 88.3 | 487.2 | 0.0 | 5.0 | 0 | 507.22 | -65.1 | -0.1 | -4.1 | -1.3 | | 0.0 | 0.0 | 17.7 | | 0.0 | | |
| Conveyor Belt | Area | Leq,adj,9h | | | 61.4 | 88.3 | 487.2 | 0.0 | 5.0 | 0 | 507.22 | -65.1 | -0.1 | -4.1 | -1.3 | | 0.0 | 0.0 | 17.7 | -9.5 | 0.0 | 0.0 | 13.2 |
| Forklift_North | Area | Leq,adj,1h | | | 63.2 | 92.0 | 768.7 | 0.0 | 5.0 | 0 | 656.05 | -67.3 | -1.3 | -4.0 | -6.7 | | 0.0 | 0.0 | 12.7 | 0.0 | 0.0 | 0.0 | 17.7 |
| Forklift_North | Area | Leq,adj,1h | | | 63.2 | 92.0 | 768.7 | 0.0 | 5.0 | 0 | 656.05 | -67.3 | -1.3 | -4.0 | -6.7 | | 0.0 | 0.0 | 12.7 | | | | |
| Forklift_North | Area | Leq,adj,1h | | | 63.2 | 92.0 | 768.7 | 0.0 | 5.0 | 0 | 656.05 | -67.3 | -1.3 | -4.0 | -6.7 | | 0.0 | 0.0 | 12.7 | 0.0 | 0.0 | 0.0 | 17.7 |
| Forklift_North | Area | Leq,adj,11 | | | 63.2 | 92.0 | 768.7 | 0.0 | 5.0 | 0 | 656.05 | -67.3 | -1.3 | -4.0 | -6.7 | | 0.0 | 0.0 | 12.7 | -1.4 | 0.0 | 0.0 | 16.3 |
| Forklift_North | Area | Leq,adj,4h | | | 63.2 | 92.0 | 768.7 | 0.0 | 5.0 | 0 | 656.05 | -67.3 | -1.3 | -4.0 | -6.7 | | 0.0 | 0.0 | 12.7 | | 0.0 | | |
| Forklift_North | Area | Leq,adj,9h | | | 63.2 | 92.0 | 768.7 | 0.0 | 5.0 | 0 | 656.05 | -67.3 | -1.3 | -4.0 | -6.7 | | 0.0 | 0.0 | 12.7 | -9.5 | 0.0 | 0.0 | 8.1 |
| Forklift_South | Area | Leq,adj,1h | | | 59.7 | 92.0 | 1721.7 | 0.0 | 5.0 | 0 | 556.96 | -65.9 | -1.3 | -4.0 | -6.2 | | 0.0 | 0.0 | 14.6 | 0.0 | 0.0 | 0.0 | 19.6 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Proposed Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | B(A | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Forklift_South | Area | Leq,adj,1h | | | 59.7 | 92.0 | 1721.7 | 0.0 | 5.0 | 0 | 556.96 | -65.9 | -1.3 | -4.0 | -6.2 | | 0.0 | 0.0 | 14.6 | | | | |
| Forklift_South | Area | Leq,adj,1h | | | 59.7 | 92.0 | 1721.7 | 0.0 | 5.0 | 0 | 556.96 | -65.9 | -1.3 | -4.0 | -6.2 | | 0.0 | 0.0 | 14.6 | 0.0 | 0.0 | 0.0 | 19.6 |
| Forklift_South | Area | Leq,adj,11 | | | 59.7 | 92.0 | 1721.7 | 0.0 | 5.0 | 0 | 556.96 | -65.9 | -1.3 | -4.0 | -6.2 | | 0.0 | 0.0 | 14.6 | -1.4 | 0.0 | 0.0 | 18.2 |
| Forklift_South | Area | Leq,adj,4h | | | 59.7 | 92.0 | 1721.7 | 0.0 | 5.0 | 0 | 556.96 | -65.9 | -1.3 | -4.0 | -6.2 | | 0.0 | 0.0 | 14.6 | | 0.0 | | |
| Forklift_South | Area | Leq,adj,9h | | | 59.7 | 92.0 | 1721.7 | 0.0 | 5.0 | 0 | 556.96 | -65.9 | -1.3 | -4.0 | -6.2 | | 0.0 | 0.0 | 14.6 | -9.5 | 0.0 | 0.0 | 10.0 |
| North Flexi Wall-Breakout North Flexishield | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 504.64 | -65.1 | -5.3 | -5.7 | -0.4 | | 0.0 | 0.0 | 9.2 | 0.0 | 0.0 | 0.0 | 9.2 |
| North Flexi Wall-Breakout North Flexishield | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 504.64 | -65.1 | -5.3 | -5.7 | -0.4 | | 0.0 | 0.0 | 9.2 | | | | |
| North Flexi Wall-Breakout North Flexishield | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 504.64 | -65.1 | -5.3 | -5.7 | -0.4 | | 0.0 | 0.0 | 9.2 | -3.0 | 0.0 | 0.0 | 6.2 |
| North Flexi Wall-Breakout North Flexishield | Area | Leq,adj,11 | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 504.64 | -65.1 | -5.3 | -5.7 | -0.4 | | 0.0 | 0.0 | 9.2 | -1.4 | 0.0 | 0.0 | 7.8 |
| North Flexi Wall-Breakout North Flexishield | Area | Leq,adj,4h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 504.64 | -65.1 | -5.3 | -5.7 | -0.4 | | 0.0 | 0.0 | 9.2 | | 0.0 | | |
| North Flexi Wall-Breakout North Flexishield | Area | Leq,adj,9h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 504.64 | -65.1 | -5.3 | -5.7 | -0.4 | | 0.0 | 0.0 | 9.2 | -12.6 | 0.0 | 0.0 | -3.4 |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 502.90 | -65.0 | -2.6 | -11.3 | -1.3 | | 0.0 | 5.3 | 25.2 | 0.0 | 0.0 | 0.0 | 30.2 |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 502.90 | -65.0 | -2.6 | -11.3 | -1.3 | | 0.0 | 5.3 | 25.2 | | | | |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 502.90 | -65.0 | -2.6 | -11.3 | -1.3 | | 0.0 | 5.3 | 25.2 | -3.0 | 0.0 | 0.0 | 27.2 |
| Shredder Breakout | Point | Leq,adj,11 | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 502.90 | -65.0 | -2.6 | -11.3 | -1.3 | | 0.0 | 5.3 | 25.2 | -1.4 | 0.0 | 0.0 | 28.8 |
| Shredder Breakout | Point | Leq,adj,4h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 502.90 | -65.0 | -2.6 | -11.3 | -1.3 | | 0.0 | 5.3 | 25.2 | | 0.0 | | |
| Shredder Breakout | Point | Leq,adj,9h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 502.90 | -65.0 | -2.6 | -11.3 | -1.3 | | 0.0 | 5.3 | 25.2 | -12.6 | 0.0 | 0.0 | 17.6 |
| Shredder Shed_Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 502.76 | -65.0 | -5.0 | -4.8 | -0.4 | | 0.0 | 0.0 | 18.8 | 0.0 | 0.0 | 0.0 | 23.8 |
| Shredder Shed_Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 502.76 | -65.0 | -5.0 | -4.8 | -0.4 | | 0.0 | 0.0 | 18.8 | | | | |
| Shredder Shed_Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 502.76 | -65.0 | -5.0 | -4.8 | -0.4 | | 0.0 | 0.0 | 18.8 | 0.0 | 0.0 | 0.0 | 23.8 |
| Shredder Shed_Eastern Facade | Area | Leq,adj,11 | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 502.76 | -65.0 | -5.0 | -4.8 | -0.4 | | 0.0 | 0.0 | 18.8 | -1.4 | 0.0 | 0.0 | 22.4 |
| Shredder Shed_Eastern Facade | Area | Leq,adj,4h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 502.76 | -65.0 | -5.0 | -4.8 | -0.4 | | 0.0 | 0.0 | 18.8 | | 0.0 | | |
| Shredder Shed_Eastern Facade | Area | Leq,adj,9h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 502.76 | -65.0 | -5.0 | -4.8 | -0.4 | | 0.0 | 0.0 | 18.8 | -9.5 | 0.0 | 0.0 | 14.3 |
| Shredder Shed_Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 5.0 | 0.0 | 3 | 505.38 | -65.1 | -5.0 | -5.0 | -0.3 | | 0.0 | 0.0 | 17.5 | 0.0 | 0.0 | 0.0 | 22.5 |
| Shredder Shed_Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 5.0 | 0.0 | 3 | 505.38 | -65.1 | -5.0 | -5.0 | -0.3 | | 0.0 | 0.0 | 17.5 | | | | |
| Shredder Shed_Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 5.0 | 0.0 | 3 | 505.38 | -65.1 | -5.0 | -5.0 | -0.3 | | 0.0 | 0.0 | 17.5 | 0.0 | 0.0 | 0.0 | 22.5 |
| Shredder Shed_Northern Facade | Area | Leq,adj,11 | | | 78.7 | 89.9 | 13.1 | 5.0 | 0.0 | 3 | 505.38 | -65.1 | -5.0 | -5.0 | -0.3 | | 0.0 | 0.0 | 17.5 | -1.4 | 0.0 | 0.0 | 21.2 |
| Shredder Shed_Northern Facade | Area | Leq,adj,4h | | | 78.7 | 89.9 | 13.1 | 5.0 | 0.0 | 3 | 505.38 | -65.1 | -5.0 | -5.0 | -0.3 | | 0.0 | 0.0 | 17.5 | | 0.0 | | |
| Shredder Shed_Northern Facade | Area | Leq,adj,9h | | | 78.7 | 89.9 | 13.1 | 5.0 | 0.0 | 3 | 505.38 | -65.1 | -5.0 | -5.0 | -0.3 | | 0.0 | 0.0 | 17.5 | -9.5 | 0.0 | 0.0 | 13.0 |
| Shredder Shed_Roof | Area | Leq,adj,1h | | | 78.7 | 92.6 | 24.7 | 5.0 | 0.0 | 0 | 502.67 | -65.0 | -4.5 | -1.9 | -0.7 | | 0.0 | 0.0 | 20.5 | 0.0 | 0.0 | 0.0 | 25.5 |
| Shredder Shed_Roof | Area | Leq,adj,1h | | | 78.7 | 92.6 | 24.7 | 5.0 | 0.0 | 0 | 502.67 | -65.0 | -4.5 | -1.9 | -0.7 | | 0.0 | 0.0 | 20.5 | | | | |
| Shredder Shed_Roof | Area | Leq,adj,1h | | | 78.7 | 92.6 | 24.7 | 5.0 | 0.0 | 0 | 502.67 | -65.0 | -4.5 | -1.9 | -0.7 | | 0.0 | 0.0 | 20.5 | 0.0 | 0.0 | 0.0 | 25.5 |
| Shredder Shed_Roof | Area | Leq,adj,11 | | | 78.7 | 92.6 | 24.7 | 5.0 | 0.0 | 0 | 502.67 | -65.0 | -4.5 | -1.9 | -0.7 | | 0.0 | 0.0 | 20.5 | -1.4 | 0.0 | 0.0 | 24.1 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Proposed Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | B(A | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Shredder Shed_Roof | Area | Leq,adj,4h | | | 78.7 | 92.6 | 24.7 | 5.0 | 0.0 | 0 | 502.67 | -65.0 | -4.5 | -1.9 | -0.7 | | 0.0 | 0.0 | 20.5 | | 0.0 | | |
| Shredder Shed_Roof | Area | Leq,adj,9h | | | 78.7 | 92.6 | 24.7 | 5.0 | 0.0 | 0 | 502.67 | -65.0 | -4.5 | -1.9 | -0.7 | | 0.0 | 0.0 | 20.5 | -9.5 | 0.0 | 0.0 | 16.0 |
| Shredder Shed_Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 502.32 | -65.0 | -4.9 | -1.9 | -0.7 | | 0.0 | 0.0 | 21.5 | 0.0 | 0.0 | 0.0 | 26.5 |
| Shredder Shed_Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 502.32 | -65.0 | -4.9 | -1.9 | -0.7 | | 0.0 | 0.0 | 21.5 | | | | |
| Shredder Shed_Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 502.32 | -65.0 | -4.9 | -1.9 | -0.7 | | 0.0 | 0.0 | 21.5 | 0.0 | 0.0 | 0.0 | 26.5 |
| Shredder Shed_Western Facade | Area | Leq,adj,11 | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 502.32 | -65.0 | -4.9 | -1.9 | -0.7 | | 0.0 | 0.0 | 21.5 | -1.4 | 0.0 | 0.0 | 25.1 |
| Shredder Shed_Western Facade | Area | Leq,adj,4h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 502.32 | -65.0 | -4.9 | -1.9 | -0.7 | | 0.0 | 0.0 | 21.5 | | 0.0 | | |
| Shredder Shed_Western Facade | Area | Leq,adj,9h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 502.32 | -65.0 | -4.9 | -1.9 | -0.7 | | 0.0 | 0.0 | 21.5 | -9.5 | 0.0 | 0.0 | 16.9 |
| Shredderr Shed_Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.0 | 5.0 | 0.0 | 3 | 499.73 | -65.0 | -4.9 | -1.9 | -0.7 | | 0.0 | 0.0 | 20.4 | 0.0 | 0.0 | 0.0 | 25.4 |
| Shredderr Shed_Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.0 | 5.0 | 0.0 | 3 | 499.73 | -65.0 | -4.9 | -1.9 | -0.7 | | 0.0 | 0.0 | 20.4 | | | | |
| Shredderr Shed_Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.0 | 5.0 | 0.0 | 3 | 499.73 | -65.0 | -4.9 | -1.9 | -0.7 | | 0.0 | 0.0 | 20.4 | 0.0 | 0.0 | 0.0 | 25.4 |
| Shredderr Shed_Southern Facade | Area | Leq,adj,11 | | | 78.7 | 89.9 | 13.0 | 5.0 | 0.0 | 3 | 499.73 | -65.0 | -4.9 | -1.9 | -0.7 | | 0.0 | 0.0 | 20.4 | -1.4 | 0.0 | 0.0 | 24.0 |
| Shredderr Shed_Southern Facade | Area | Leq,adj,4h | | | 78.7 | 89.9 | 13.0 | 5.0 | 0.0 | 3 | 499.73 | -65.0 | -4.9 | -1.9 | -0.7 | | 0.0 | 0.0 | 20.4 | | 0.0 | | |
| Shredderr Shed_Southern Facade | Area | Leq,adj,9h | | | 78.7 | 89.9 | 13.0 | 5.0 | 0.0 | 3 | 499.73 | -65.0 | -4.9 | -1.9 | -0.7 | | 0.0 | 0.0 | 20.4 | -9.5 | 0.0 | 0.0 | 15.8 |
| South Flexishield-Breakout South Flexishield | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 501.19 | -65.0 | -5.3 | -1.8 | -1.0 | | 0.0 | 0.0 | 12.7 | 0.0 | 0.0 | 0.0 | 12.7 |
| South Flexishield-Breakout South Flexishield | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 501.19 | -65.0 | -5.3 | -1.8 | -1.0 | | 0.0 | 0.0 | 12.7 | | | | |
| South Flexishield-Breakout South Flexishield | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 501.19 | -65.0 | -5.3 | -1.8 | -1.0 | | 0.0 | 0.0 | 12.7 | -3.0 | 0.0 | 0.0 | 9.6 |
| South Flexishield-Breakout South Flexishield | Area | Leq,adj,11 | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 501.19 | -65.0 | -5.3 | -1.8 | -1.0 | | 0.0 | 0.0 | 12.7 | -1.4 | 0.0 | 0.0 | 11.3 |
| South Flexishield-Breakout South Flexishield | Area | Leq,adj,4h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 501.19 | -65.0 | -5.3 | -1.8 | -1.0 | | 0.0 | 0.0 | 12.7 | | 0.0 | | |
| South Flexishield-Breakout South Flexishield | Area | Leq,adj,9h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 501.19 | -65.0 | -5.3 | -1.8 | -1.0 | | 0.0 | 0.0 | 12.7 | -12.6 | 0.0 | 0.0 | 0.1 |
| Truck movements | Line | Leq,adj,1h | | | 42.9 | 70.7 | 605.6 | 0.0 | 5.0 | 0 | 595.66 | -66.5 | -2.5 | -2.6 | -2.3 | | 0.0 | 0.0 | -3.1 | 0.0 | 0.0 | 0.0 | 1.9 |
| Truck movements | Line | Leq,adj,1h | | | 42.9 | 70.7 | 605.6 | 0.0 | 5.0 | 0 | 595.66 | -66.5 | -2.5 | -2.6 | -2.3 | | 0.0 | 0.0 | -3.1 | | | | |
| Truck movements | Line | Leq,adj,1h | | | 42.9 | 70.7 | 605.6 | 0.0 | 5.0 | 0 | 595.66 | -66.5 | -2.5 | -2.6 | -2.3 | | 0.0 | 0.0 | -3.1 | 0.0 | 0.0 | 0.0 | 1.9 |
| Truck movements | Line | Leq,adj,11 | | | 42.9 | 70.7 | 605.6 | 0.0 | 5.0 | 0 | 595.66 | -66.5 | -2.5 | -2.6 | -2.3 | | 0.0 | 0.0 | -3.1 | -1.4 | 0.0 | 0.0 | 0.5 |
| Truck movements | Line | Leq,adj,4h | | | 42.9 | 70.7 | 605.6 | 0.0 | 5.0 | 0 | 595.66 | -66.5 | -2.5 | -2.6 | -2.3 | | 0.0 | 0.0 | -3.1 | | 0.0 | | |
| Truck movements | Line | Leq,adj,9h | | | 42.9 | 70.7 | 605.6 | 0.0 | 5.0 | 0 | 595.66 | -66.5 | -2.5 | -2.6 | -2.3 | | 0.0 | 0.0 | -3.1 | -9.5 | 0.0 | 0.0 | -7.7 |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 534.67 | -65.6 | -2.8 | -0.6 | -3.2 | | 0.0 | 0.0 | 11.1 | -3.0 | 0.0 | 0.0 | 8.1 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Proposed Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | B(A | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 534.67 | -65.6 | -2.8 | -0.6 | -3.2 | | 0.0 | 0.0 | 11.1 | | | | |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 534.67 | -65.6 | -2.8 | -0.6 | -3.2 | | 0.0 | 0.0 | 11.1 | 0.0 | 0.0 | 0.0 | 11.1 |
| Carpark | PLot | Leq,adj,11 | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 534.67 | -65.6 | -2.8 | -0.6 | -3.2 | | 0.0 | 0.0 | 11.1 | -3.0 | 0.0 | 0.0 | 8.1 |
| Carpark | PLot | Leq,adj,4h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 534.67 | -65.6 | -2.8 | -0.6 | -3.2 | | 0.0 | 0.0 | 11.1 | | 0.0 | | |
| Carpark | PLot | Leq,adj,9h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 534.67 | -65.6 | -2.8 | -0.6 | -3.2 | | 0.0 | 0.0 | 11.1 | -9.5 | 0.0 | 0.0 | 1.5 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Proposed Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | B(A | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Receiver 186 Boonenne Road Fl GF Dir S | Lr,lim dB(A) | Leq,15min 42 dB(A) | | | Lr,lim dB(A) | | Lr,lim dB(A) | Lr,lim dB(A) | | Lr,lim dB(A) | | Leq,adj,1h dB(A) | | Leq,adj,1h 35 dB(A) | | | Leq,adj,11 38 dB(A) | | Leq,adj,4h dB(A) | | Leq,adj,9h 26 dB(A) | | |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 388.05 | -62.8 | -1.3 | -4.1 | -5.1 | | 0.0 | 0.0 | 40.7 | -4.8 | 0.0 | 0.0 | 40.9 |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 388.05 | -62.8 | -1.3 | -4.1 | -5.1 | | 0.0 | 0.0 | 40.7 | | | | |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 388.05 | -62.8 | -1.3 | -4.1 | -5.1 | | 0.0 | 0.0 | 40.7 | | 0.0 | | |
| Chainsaw | Point | Leq,adj,11 | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 388.05 | -62.8 | -1.3 | -4.1 | -5.1 | | 0.0 | 0.0 | 40.7 | -10.4 | 0.0 | 0.0 | 35.3 |
| Chainsaw | Point | Leq,adj,4h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 388.05 | -62.8 | -1.3 | -4.1 | -5.1 | | 0.0 | 0.0 | 40.7 | | 0.0 | | |
| Chainsaw | Point | Leq,adj,9h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 388.05 | -62.8 | -1.3 | -4.1 | -5.1 | | 0.0 | 0.0 | 40.7 | | 0.0 | | |
| Circular Saw_1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 499.45 | -65.0 | -1.3 | -4.0 | -4.7 | | 0.0 | 0.0 | 24.4 | 0.0 | 0.0 | 0.0 | 29.4 |
| Circular Saw_1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 499.45 | -65.0 | -1.3 | -4.0 | -4.7 | | 0.0 | 0.0 | 24.4 | | | | |
| Circular Saw_1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 499.45 | -65.0 | -1.3 | -4.0 | -4.7 | | 0.0 | 0.0 | 24.4 | -3.0 | 0.0 | 0.0 | 26.4 |
| Circular Saw_1 | Point | Leq,adj,11 | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 499.45 | -65.0 | -1.3 | -4.0 | -4.7 | | 0.0 | 0.0 | 24.4 | -1.4 | 0.0 | 0.0 | 28.0 |
| Circular Saw_1 | Point | Leq,adj,4h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 499.45 | -65.0 | -1.3 | -4.0 | -4.7 | | 0.0 | 0.0 | 24.4 | | 0.0 | | |
| Circular Saw_1 | Point | Leq,adj,9h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 499.45 | -65.0 | -1.3 | -4.0 | -4.7 | | 0.0 | 0.0 | 24.4 | -12.6 | 0.0 | 0.0 | 16.8 |
| Circular Saw_2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 488.38 | -64.8 | -1.3 | -4.3 | -4.5 | | 0.0 | 0.0 | 24.4 | 0.0 | 0.0 | 0.0 | 29.4 |
| Circular Saw_2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 488.38 | -64.8 | -1.3 | -4.3 | -4.5 | | 0.0 | 0.0 | 24.4 | | | | |
| Circular Saw_2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 488.38 | -64.8 | -1.3 | -4.3 | -4.5 | | 0.0 | 0.0 | 24.4 | -3.0 | 0.0 | 0.0 | 26.4 |
| Circular Saw_2 | Point | Leq,adj,11 | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 488.38 | -64.8 | -1.3 | -4.3 | -4.5 | | 0.0 | 0.0 | 24.4 | -1.4 | 0.0 | 0.0 | 28.1 |
| Circular Saw_2 | Point | Leq,adj,4h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 488.38 | -64.8 | -1.3 | -4.3 | -4.5 | | 0.0 | 0.0 | 24.4 | | 0.0 | | |
| Circular Saw_2 | Point | Leq,adj,9h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 488.38 | -64.8 | -1.3 | -4.3 | -4.5 | | 0.0 | 0.0 | 24.4 | -12.6 | 0.0 | 0.0 | 16.9 |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.4 | 88.3 | 487.2 | 0.0 | 5.0 | 0 | 492.27 | -64.8 | -0.1 | -4.1 | -1.1 | | 0.0 | 0.0 | 18.2 | 0.0 | 0.0 | 0.0 | 23.2 |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.4 | 88.3 | 487.2 | 0.0 | 5.0 | 0 | 492.27 | -64.8 | -0.1 | -4.1 | -1.1 | | 0.0 | 0.0 | 18.2 | | | | |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.4 | 88.3 | 487.2 | 0.0 | 5.0 | 0 | 492.27 | -64.8 | -0.1 | -4.1 | -1.1 | | 0.0 | 0.0 | 18.2 | 0.0 | 0.0 | 0.0 | 23.2 |
| Conveyor Belt | Area | Leq,adj,11 | | | 61.4 | 88.3 | 487.2 | 0.0 | 5.0 | 0 | 492.27 | -64.8 | -0.1 | -4.1 | -1.1 | | 0.0 | 0.0 | 18.2 | -1.4 | 0.0 | 0.0 | 21.8 |
| Conveyor Belt | Area | Leq,adj,4h | | | 61.4 | 88.3 | 487.2 | 0.0 | 5.0 | 0 | 492.27 | -64.8 | -0.1 | -4.1 | -1.1 | | 0.0 | 0.0 | 18.2 | | 0.0 | | |
| Conveyor Belt | Area | Leq,adj,9h | | | 61.4 | 88.3 | 487.2 | 0.0 | 5.0 | 0 | 492.27 | -64.8 | -0.1 | -4.1 | -1.1 | | 0.0 | 0.0 | 18.2 | -9.5 | 0.0 | 0.0 | 13.6 |
| Forklift_North | Area | Leq,adj,1h | | | 63.2 | 92.0 | 768.7 | 0.0 | 5.0 | 0 | 370.99 | -62.4 | -1.3 | -4.0 | -4.9 | | 0.0 | 0.0 | 19.5 | 0.0 | 0.0 | 0.0 | 24.5 |
| Forklift_North | Area | Leq,adj,1h | | | 63.2 | 92.0 | 768.7 | 0.0 | 5.0 | 0 | 370.99 | -62.4 | -1.3 | -4.0 | -4.9 | | 0.0 | 0.0 | 19.5 | | | | |
| Forklift_North | Area | Leq,adj,1h | | | 63.2 | 92.0 | 768.7 | 0.0 | 5.0 | 0 | 370.99 | -62.4 | -1.3 | -4.0 | -4.9 | | 0.0 | 0.0 | 19.5 | 0.0 | 0.0 | 0.0 | 24.5 |
| Forklift_North | Area | Leq,adj,11 | | | 63.2 | 92.0 | 768.7 | 0.0 | 5.0 | 0 | 370.99 | -62.4 | -1.3 | -4.0 | -4.9 | | 0.0 | 0.0 | 19.5 | -1.4 | 0.0 | 0.0 | 23.1 |
| Forklift_North | Area | Leq,adj,4h | | | 63.2 | 92.0 | 768.7 | 0.0 | 5.0 | 0 | 370.99 | -62.4 | -1.3 | -4.0 | -4.9 | | 0.0 | 0.0 | 19.5 | | 0.0 | | |
| Forklift_North | Area | Leq,adj,9h | | | 63.2 | 92.0 | 768.7 | 0.0 | 5.0 | 0 | 370.99 | -62.4 | -1.3 | -4.0 | -4.9 | | 0.0 | 0.0 | 19.5 | -9.5 | 0.0 | 0.0 | 14.9 |
| Forklift_South | Area | Leq,adj,1h | | | 59.7 | 92.0 | 1721.7 | 0.0 | 5.0 | 0 | 459.86 | -64.2 | -1.3 | -4.4 | -5.4 | | 0.0 | 0.0 | 16.6 | 0.0 | 0.0 | 0.0 | 21.6 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Proposed Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | B(A | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Forklift_South | Area | Leq,adj,1h | | | 59.7 | 92.0 | 1721.7 | 0.0 | 5.0 | 0 | 459.86 | -64.2 | -1.3 | -4.4 | -5.4 | | 0.0 | 0.0 | 16.6 | | | | |
| Forklift_South | Area | Leq,adj,1h | | | 59.7 | 92.0 | 1721.7 | 0.0 | 5.0 | 0 | 459.86 | -64.2 | -1.3 | -4.4 | -5.4 | | 0.0 | 0.0 | 16.6 | 0.0 | 0.0 | 0.0 | 21.6 |
| Forklift_South | Area | Leq,adj,11 | | | 59.7 | 92.0 | 1721.7 | 0.0 | 5.0 | 0 | 459.86 | -64.2 | -1.3 | -4.4 | -5.4 | | 0.0 | 0.0 | 16.6 | -1.4 | 0.0 | 0.0 | 20.2 |
| Forklift_South | Area | Leq,adj,4h | | | 59.7 | 92.0 | 1721.7 | 0.0 | 5.0 | 0 | 459.86 | -64.2 | -1.3 | -4.4 | -5.4 | | 0.0 | 0.0 | 16.6 | | 0.0 | | |
| Forklift_South | Area | Leq,adj,9h | | | 59.7 | 92.0 | 1721.7 | 0.0 | 5.0 | 0 | 459.86 | -64.2 | -1.3 | -4.4 | -5.4 | | 0.0 | 0.0 | 16.6 | -9.5 | 0.0 | 0.0 | 12.1 |
| North Flexi Wall-Breakout North Flexishield | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 485.40 | -64.7 | -5.2 | -2.3 | -0.8 | | 0.0 | 0.0 | 12.6 | 0.0 | 0.0 | 0.0 | 12.6 |
| North Flexi Wall-Breakout North Flexishield | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 485.40 | -64.7 | -5.2 | -2.3 | -0.8 | | 0.0 | 0.0 | 12.6 | | | | |
| North Flexi Wall-Breakout North Flexishield | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 485.40 | -64.7 | -5.2 | -2.3 | -0.8 | | 0.0 | 0.0 | 12.6 | -3.0 | 0.0 | 0.0 | 9.6 |
| North Flexi Wall-Breakout North Flexishield | Area | Leq,adj,11 | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 485.40 | -64.7 | -5.2 | -2.3 | -0.8 | | 0.0 | 0.0 | 12.6 | -1.4 | 0.0 | 0.0 | 11.3 |
| North Flexi Wall-Breakout North Flexishield | Area | Leq,adj,4h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 485.40 | -64.7 | -5.2 | -2.3 | -0.8 | | 0.0 | 0.0 | 12.6 | | 0.0 | | |
| North Flexi Wall-Breakout North Flexishield | Area | Leq,adj,9h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 485.40 | -64.7 | -5.2 | -2.3 | -0.8 | | 0.0 | 0.0 | 12.6 | -12.6 | 0.0 | 0.0 | 0.1 |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 487.11 | -64.7 | -2.6 | -13.3 | -0.9 | | 0.0 | 1.8 | 20.5 | 0.0 | 0.0 | 0.0 | 25.5 |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 487.11 | -64.7 | -2.6 | -13.3 | -0.9 | | 0.0 | 1.8 | 20.5 | | | | |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 487.11 | -64.7 | -2.6 | -13.3 | -0.9 | | 0.0 | 1.8 | 20.5 | -3.0 | 0.0 | 0.0 | 22.5 |
| Shredder Breakout | Point | Leq,adj,11 | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 487.11 | -64.7 | -2.6 | -13.3 | -0.9 | | 0.0 | 1.8 | 20.5 | -1.4 | 0.0 | 0.0 | 24.1 |
| Shredder Breakout | Point | Leq,adj,4h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 487.11 | -64.7 | -2.6 | -13.3 | -0.9 | | 0.0 | 1.8 | 20.5 | | 0.0 | | |
| Shredder Breakout | Point | Leq,adj,9h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 487.11 | -64.7 | -2.6 | -13.3 | -0.9 | | 0.0 | 1.8 | 20.5 | -12.6 | 0.0 | 0.0 | 13.0 |
| Shredder Shed_Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 486.50 | -64.7 | -4.9 | -5.5 | -0.3 | | 0.0 | 0.0 | 18.6 | 0.0 | 0.0 | 0.0 | 23.6 |
| Shredder Shed_Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 486.50 | -64.7 | -4.9 | -5.5 | -0.3 | | 0.0 | 0.0 | 18.6 | | | | |
| Shredder Shed_Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 486.50 | -64.7 | -4.9 | -5.5 | -0.3 | | 0.0 | 0.0 | 18.6 | 0.0 | 0.0 | 0.0 | 23.6 |
| Shredder Shed_Eastern Facade | Area | Leq,adj,11 | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 486.50 | -64.7 | -4.9 | -5.5 | -0.3 | | 0.0 | 0.0 | 18.6 | -1.4 | 0.0 | 0.0 | 22.2 |
| Shredder Shed_Eastern Facade | Area | Leq,adj,4h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 486.50 | -64.7 | -4.9 | -5.5 | -0.3 | | 0.0 | 0.0 | 18.6 | | 0.0 | | |
| Shredder Shed_Eastern Facade | Area | Leq,adj,9h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 486.50 | -64.7 | -4.9 | -5.5 | -0.3 | | 0.0 | 0.0 | 18.6 | -9.5 | 0.0 | 0.0 | 14.1 |
| Shredder Shed_Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 5.0 | 0.0 | 3 | 483.02 | -64.7 | -4.8 | -1.9 | -0.6 | | 0.0 | 0.0 | 20.8 | 0.0 | 0.0 | 0.0 | 25.8 |
| Shredder Shed_Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 5.0 | 0.0 | 3 | 483.02 | -64.7 | -4.8 | -1.9 | -0.6 | | 0.0 | 0.0 | 20.8 | | | | |
| Shredder Shed_Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 5.0 | 0.0 | 3 | 483.02 | -64.7 | -4.8 | -1.9 | -0.6 | | 0.0 | 0.0 | 20.8 | 0.0 | 0.0 | 0.0 | 25.8 |
| Shredder Shed_Northern Facade | Area | Leq,adj,11 | | | 78.7 | 89.9 | 13.1 | 5.0 | 0.0 | 3 | 483.02 | -64.7 | -4.8 | -1.9 | -0.6 | | 0.0 | 0.0 | 20.8 | -1.4 | 0.0 | 0.0 | 24.5 |
| Shredder Shed_Northern Facade | Area | Leq,adj,4h | | | 78.7 | 89.9 | 13.1 | 5.0 | 0.0 | 3 | 483.02 | -64.7 | -4.8 | -1.9 | -0.6 | | 0.0 | 0.0 | 20.8 | | 0.0 | | |
| Shredder Shed_Northern Facade | Area | Leq,adj,9h | | | 78.7 | 89.9 | 13.1 | 5.0 | 0.0 | 3 | 483.02 | -64.7 | -4.8 | -1.9 | -0.6 | | 0.0 | 0.0 | 20.8 | -9.5 | 0.0 | 0.0 | 16.3 |
| Shredder Shed_Roof | Area | Leq,adj,1h | | | 78.7 | 92.6 | 24.7 | 5.0 | 0.0 | 0 | 485.66 | -64.7 | -4.4 | -1.9 | -0.7 | | 0.0 | 0.0 | 20.9 | 0.0 | 0.0 | 0.0 | 25.9 |
| Shredder Shed_Roof | Area | Leq,adj,1h | | | 78.7 | 92.6 | 24.7 | 5.0 | 0.0 | 0 | 485.66 | -64.7 | -4.4 | -1.9 | -0.7 | | 0.0 | 0.0 | 20.9 | | | | |
| Shredder Shed_Roof | Area | Leq,adj,1h | | | 78.7 | 92.6 | 24.7 | 5.0 | 0.0 | 0 | 485.66 | -64.7 | -4.4 | -1.9 | -0.7 | | 0.0 | 0.0 | 20.9 | 0.0 | 0.0 | 0.0 | 25.9 |
| Shredder Shed_Roof | Area | Leq,adj,11 | | | 78.7 | 92.6 | 24.7 | 5.0 | 0.0 | 0 | 485.66 | -64.7 | -4.4 | -1.9 | -0.7 | | 0.0 | 0.0 | 20.9 | -1.4 | 0.0 | 0.0 | 24.5 |

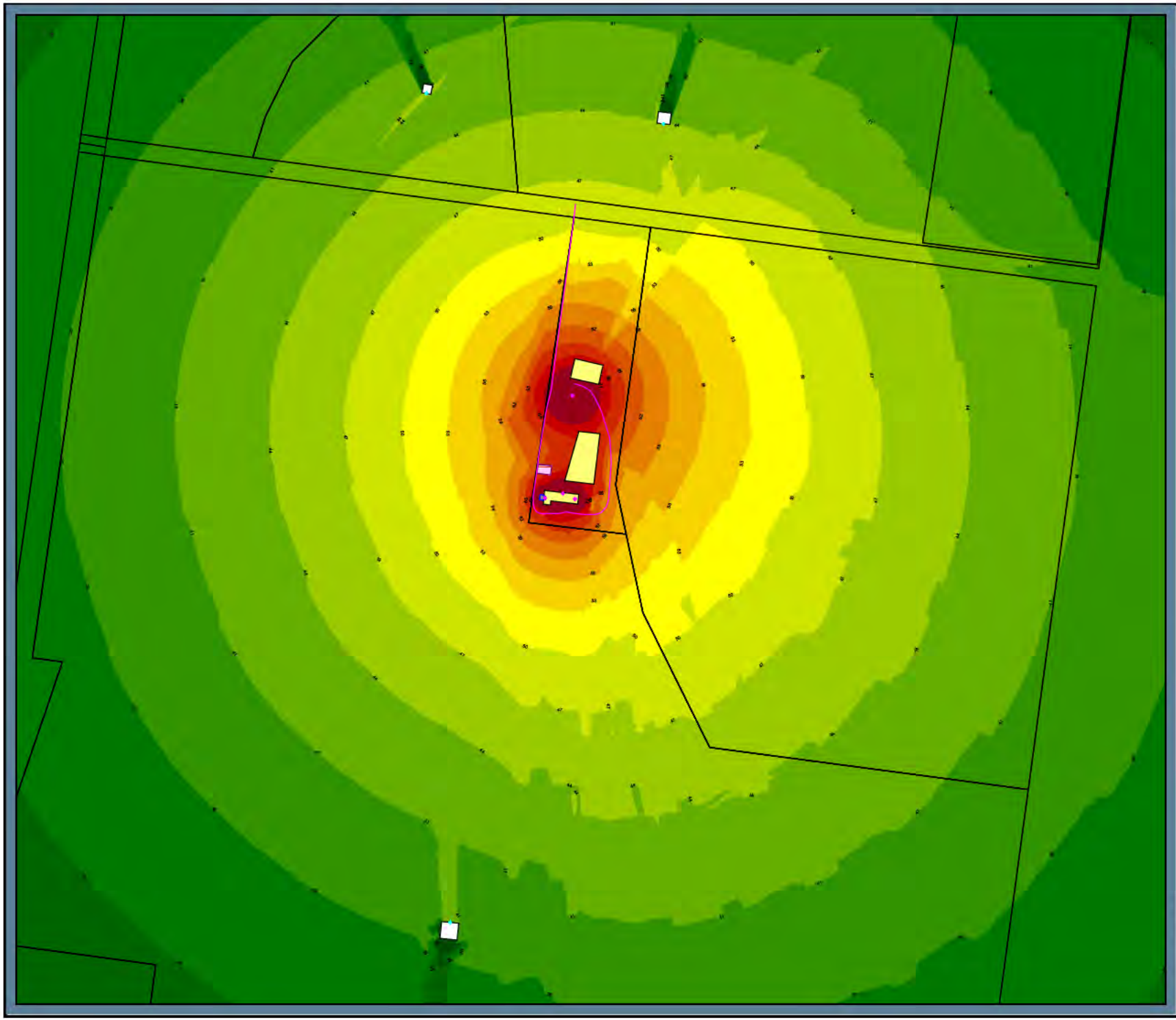
# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Proposed Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | B(A | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Shredder Shed_Roof | Area | Leq,adj,4h | | | 78.7 | 92.6 | 24.7 | 5.0 | 0.0 | 0 | 485.66 | -64.7 | -4.4 | -1.9 | -0.7 | | 0.0 | 0.0 | 20.9 | | 0.0 | | |
| Shredder Shed_Roof | Area | Leq,adj,9h | | | 78.7 | 92.6 | 24.7 | 5.0 | 0.0 | 0 | 485.66 | -64.7 | -4.4 | -1.9 | -0.7 | | 0.0 | 0.0 | 20.9 | -9.5 | 0.0 | 0.0 | 16.4 |
| Shredder Shed_Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 484.83 | -64.7 | -4.9 | -2.2 | -0.6 | | 0.0 | 0.0 | 21.7 | 0.0 | 0.0 | 0.0 | 26.7 |
| Shredder Shed_Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 484.83 | -64.7 | -4.9 | -2.2 | -0.6 | | 0.0 | 0.0 | 21.7 | | | | |
| Shredder Shed_Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 484.83 | -64.7 | -4.9 | -2.2 | -0.6 | | 0.0 | 0.0 | 21.7 | 0.0 | 0.0 | 0.0 | 26.7 |
| Shredder Shed_Western Facade | Area | Leq,adj,11 | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 484.83 | -64.7 | -4.9 | -2.2 | -0.6 | | 0.0 | 0.0 | 21.7 | -1.4 | 0.0 | 0.0 | 25.3 |
| Shredder Shed_Western Facade | Area | Leq,adj,4h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 484.83 | -64.7 | -4.9 | -2.2 | -0.6 | | 0.0 | 0.0 | 21.7 | | 0.0 | | |
| Shredder Shed_Western Facade | Area | Leq,adj,9h | | | 78.7 | 91.0 | 17.0 | 5.0 | 0.0 | 3 | 484.83 | -64.7 | -4.9 | -2.2 | -0.6 | | 0.0 | 0.0 | 21.7 | -9.5 | 0.0 | 0.0 | 17.1 |
| Shredderr Shed_Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.0 | 5.0 | 0.0 | 3 | 488.33 | -64.8 | -4.9 | -5.5 | -0.3 | | 0.0 | 0.0 | 17.4 | 0.0 | 0.0 | 0.0 | 22.4 |
| Shredderr Shed_Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.0 | 5.0 | 0.0 | 3 | 488.33 | -64.8 | -4.9 | -5.5 | -0.3 | | 0.0 | 0.0 | 17.4 | | | | |
| Shredderr Shed_Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.0 | 5.0 | 0.0 | 3 | 488.33 | -64.8 | -4.9 | -5.5 | -0.3 | | 0.0 | 0.0 | 17.4 | 0.0 | 0.0 | 0.0 | 22.4 |
| Shredderr Shed_Southern Facade | Area | Leq,adj,11 | | | 78.7 | 89.9 | 13.0 | 5.0 | 0.0 | 3 | 488.33 | -64.8 | -4.9 | -5.5 | -0.3 | | 0.0 | 0.0 | 17.4 | -1.4 | 0.0 | 0.0 | 21.0 |
| Shredderr Shed_Southern Facade | Area | Leq,adj,4h | | | 78.7 | 89.9 | 13.0 | 5.0 | 0.0 | 3 | 488.33 | -64.8 | -4.9 | -5.5 | -0.3 | | 0.0 | 0.0 | 17.4 | | 0.0 | | |
| Shredderr Shed_Southern Facade | Area | Leq,adj,9h | | | 78.7 | 89.9 | 13.0 | 5.0 | 0.0 | 3 | 488.33 | -64.8 | -4.9 | -5.5 | -0.3 | | 0.0 | 0.0 | 17.4 | -9.5 | 0.0 | 0.0 | 12.9 |
| South Flexishield-Breakout South Flexishield | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 488.64 | -64.8 | -5.2 | -7.1 | -0.3 | | 0.0 | 0.0 | 8.2 | 0.0 | 0.0 | 0.0 | 8.2 |
| South Flexishield-Breakout South Flexishield | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 488.64 | -64.8 | -5.2 | -7.1 | -0.3 | | 0.0 | 0.0 | 8.2 | | | | |
| South Flexishield-Breakout South Flexishield | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 488.64 | -64.8 | -5.2 | -7.1 | -0.3 | | 0.0 | 0.0 | 8.2 | -3.0 | 0.0 | 0.0 | 5.2 |
| South Flexishield-Breakout South Flexishield | Area | Leq,adj,11 | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 488.64 | -64.8 | -5.2 | -7.1 | -0.3 | | 0.0 | 0.0 | 8.2 | -1.4 | 0.0 | 0.0 | 6.8 |
| South Flexishield-Breakout South Flexishield | Area | Leq,adj,4h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 488.64 | -64.8 | -5.2 | -7.1 | -0.3 | | 0.0 | 0.0 | 8.2 | | 0.0 | | |
| South Flexishield-Breakout South Flexishield | Area | Leq,adj,9h | | | 76.0 | 82.7 | 4.6 | 0.0 | 0.0 | 3 | 488.64 | -64.8 | -5.2 | -7.1 | -0.3 | | 0.0 | 0.0 | 8.2 | -12.6 | 0.0 | 0.0 | -4.3 |
| Truck movements | Line | Leq,adj,1h | | | 42.9 | 70.7 | 605.6 | 0.0 | 5.0 | 0 | 356.34 | -62.0 | -2.6 | -2.5 | -1.5 | | 0.0 | 0.0 | 2.1 | 0.0 | 0.0 | 0.0 | 7.1 |
| Truck movements | Line | Leq,adj,1h | | | 42.9 | 70.7 | 605.6 | 0.0 | 5.0 | 0 | 356.34 | -62.0 | -2.6 | -2.5 | -1.5 | | 0.0 | 0.0 | 2.1 | | | | |
| Truck movements | Line | Leq,adj,1h | | | 42.9 | 70.7 | 605.6 | 0.0 | 5.0 | 0 | 356.34 | -62.0 | -2.6 | -2.5 | -1.5 | | 0.0 | 0.0 | 2.1 | 0.0 | 0.0 | 0.0 | 7.1 |
| Truck movements | Line | Leq,adj,11 | | | 42.9 | 70.7 | 605.6 | 0.0 | 5.0 | 0 | 356.34 | -62.0 | -2.6 | -2.5 | -1.5 | | 0.0 | 0.0 | 2.1 | -1.4 | 0.0 | 0.0 | 5.7 |
| Truck movements | Line | Leq,adj,4h | | | 42.9 | 70.7 | 605.6 | 0.0 | 5.0 | 0 | 356.34 | -62.0 | -2.6 | -2.5 | -1.5 | | 0.0 | 0.0 | 2.1 | | 0.0 | | |
| Truck movements | Line | Leq,adj,9h | | | 42.9 | 70.7 | 605.6 | 0.0 | 5.0 | 0 | 356.34 | -62.0 | -2.6 | -2.5 | -1.5 | | 0.0 | 0.0 | 2.1 | -9.5 | 0.0 | 0.0 | -2.5 |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 455.59 | -64.2 | -2.7 | 0.0 | -2.8 | | 0.0 | 0.0 | 13.6 | -3.0 | 0.0 | 0.0 | 10.6 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Proposed Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | B(A | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 455.59 | -64.2 | -2.7 | 0.0 | -2.8 | | 0.0 | 0.0 | 13.6 | | | | |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 455.59 | -64.2 | -2.7 | 0.0 | -2.8 | | 0.0 | 0.0 | 13.6 | 0.0 | 0.0 | 0.0 | 13.6 |
| Carpark | PLot | Leq,adj,11 | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 455.59 | -64.2 | -2.7 | 0.0 | -2.8 | | 0.0 | 0.0 | 13.6 | -3.0 | 0.0 | 0.0 | 10.6 |
| Carpark | PLot | Leq,adj,4h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 455.59 | -64.2 | -2.7 | 0.0 | -2.8 | | 0.0 | 0.0 | 13.6 | | 0.0 | | |
| Carpark | PLot | Leq,adj,9h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 455.59 | -64.2 | -2.7 | 0.0 | -2.8 | | 0.0 | 0.0 | 13.6 | -9.5 | 0.0 | 0.0 | 4.0 |

# Appendix F – Noise Contour Maps



ATP230421

**Boonenne Timbers**

## Noise Levels Associated with Existing Development

## Ground Floor (1.8m AGL)

Operational Noise Level
$L_{eq,adj,1hr,\ Day}$ dB(A)

| | |
|---|---|
| 32 < | <= 32 |
| 35 < | <= 35 |
| 38 < | <= 38 |
| 41 < | <= 41 |
| 44 < | <= 44 |
| 47 < | <= 47 |
| 50 < | <= 50 |
| 53 < | <= 53 |
| 56 < | <= 56 |
| 59 < | <= 59 |
| 62 < | <= 62 |
| 65 < | <= 65 |
| 68 < | <= 71 |
| 71 < | |

**Legend**

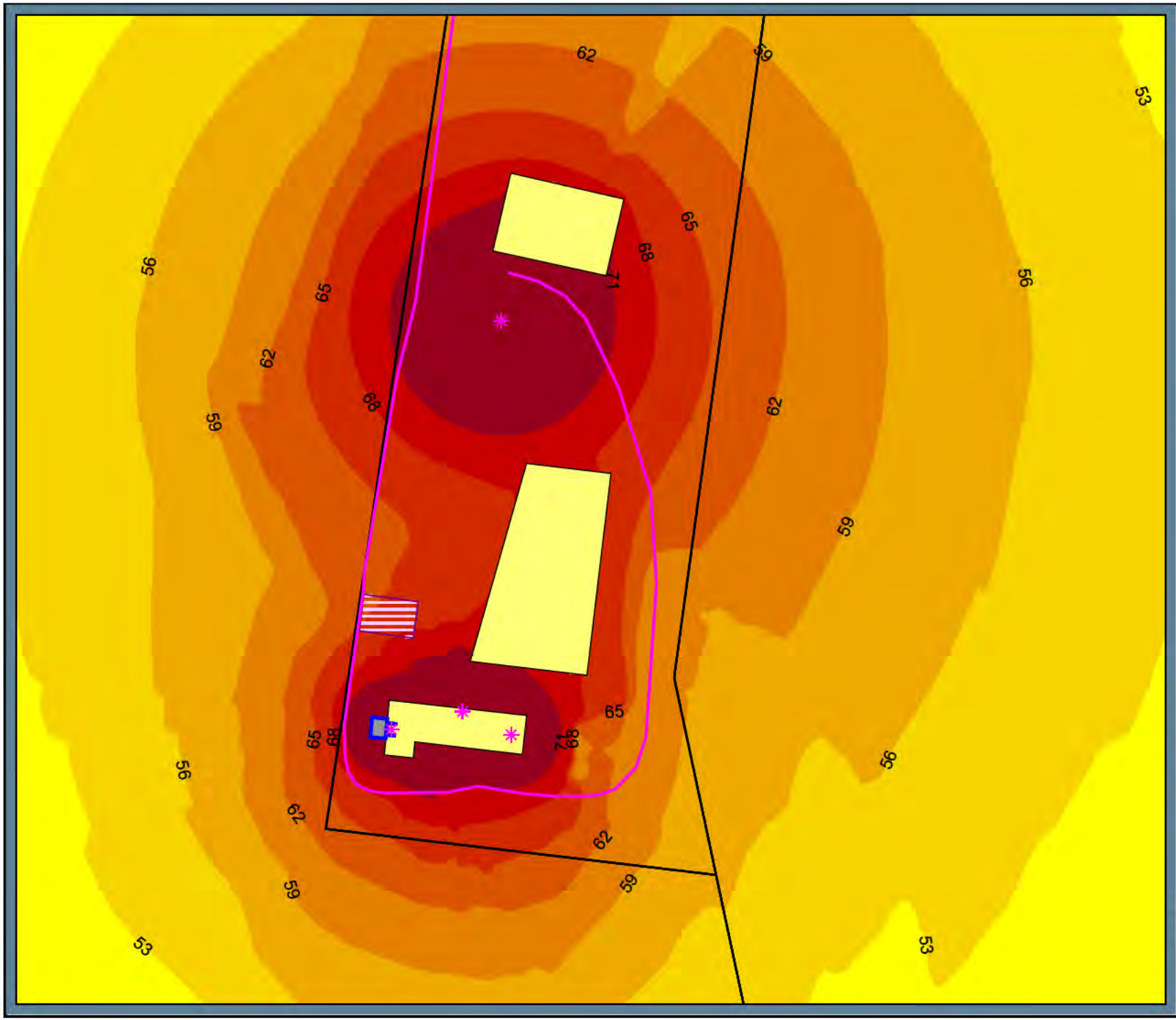
- Adjacent building
- Lot boundary
- Noise source (point)
- Area source
- Line Source
- Parking lot
- Industrial building; Room

**SCALE @ A4 1:6000**

0 25 50 100 150 200 250 m

N

Grid Spacing: 2m
Project Engineer: Felix Gau Rinaldi
Created: 18/08/2023
Processed with SoundPLAN 8.2




ATP230421

**Boonenne Timbers**

## Noise Levels Associated with Existing Development

## Ground Floor (1.8m AGL)

Operational Noise Level
$L_{eq,adj,1hr,\ Day}$ dB(A)

| | |
|---|---|
| 32 < | <= 32 |
| 35 < | <= 35 |
| 38 < | <= 38 |
| 41 < | <= 41 |
| 44 < | <= 44 |
| 47 < | <= 47 |
| 50 < | <= 50 |
| 53 < | <= 53 |
| 56 < | <= 56 |
| 59 < | <= 59 |
| 62 < | <= 62 |
| 65 < | <= 65 |
| 68 < | <= 68 |
| 71 < | <= 71 |

**Legend**

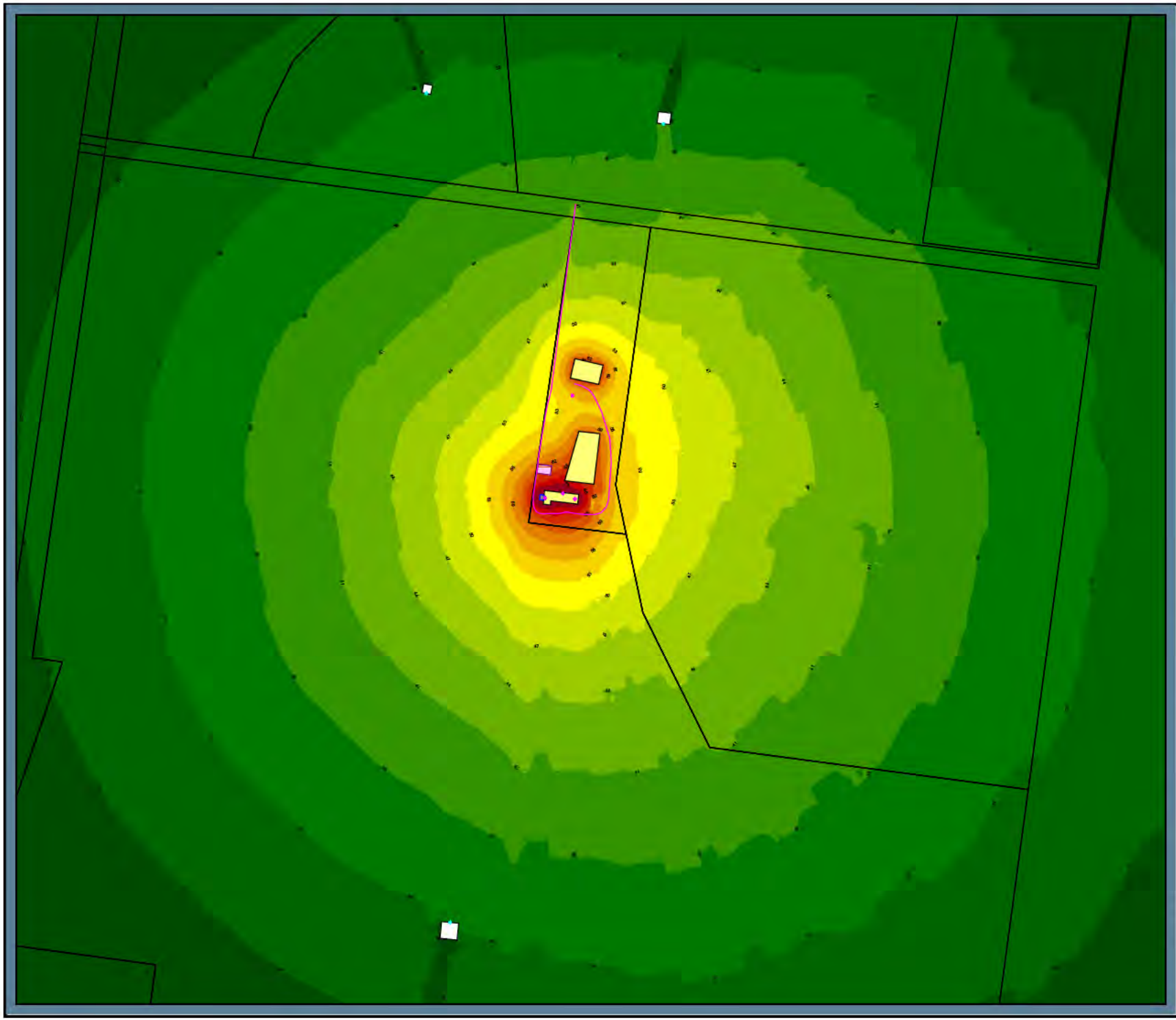
- Adjacent building
- Lot boundary
- Noise source (point)
- Area source
- Line Source
- Parking lot
- Industrial building; Room

**SCALE @ A4 1:1500**

0 5 10 20 30 40 50 m

N

Grid Spacing: 2m
Project Engineer: Felix Gau Rinaldi
Created: 18/08/2023
Processed with SoundPLAN 8.2



ATP230421

**Boonenne Timbers**

## Noise Levels Associated with Existing Development

## Ground Floor (1.8m AGL)

Operational Noise Level
$L_{eq,adj,1hr,\ Night}$ dB(A)

| | |
|---|---|
| | <= 32 |
| 32 < | <= 35 |
| 35 < | <= 38 |
| 38 < | <= 41 |
| 41 < | <= 44 |
| 44 < | <= 47 |
| 47 < | <= 50 |
| 50 < | <= 53 |
| 53 < | <= 56 |
| 56 < | <= 59 |
| 59 < | <= 62 |
| 62 < | <= 65 |
| 65 < | <= 68 |
| 68 < | <= 71 |
| 71 < | |

**Legend**

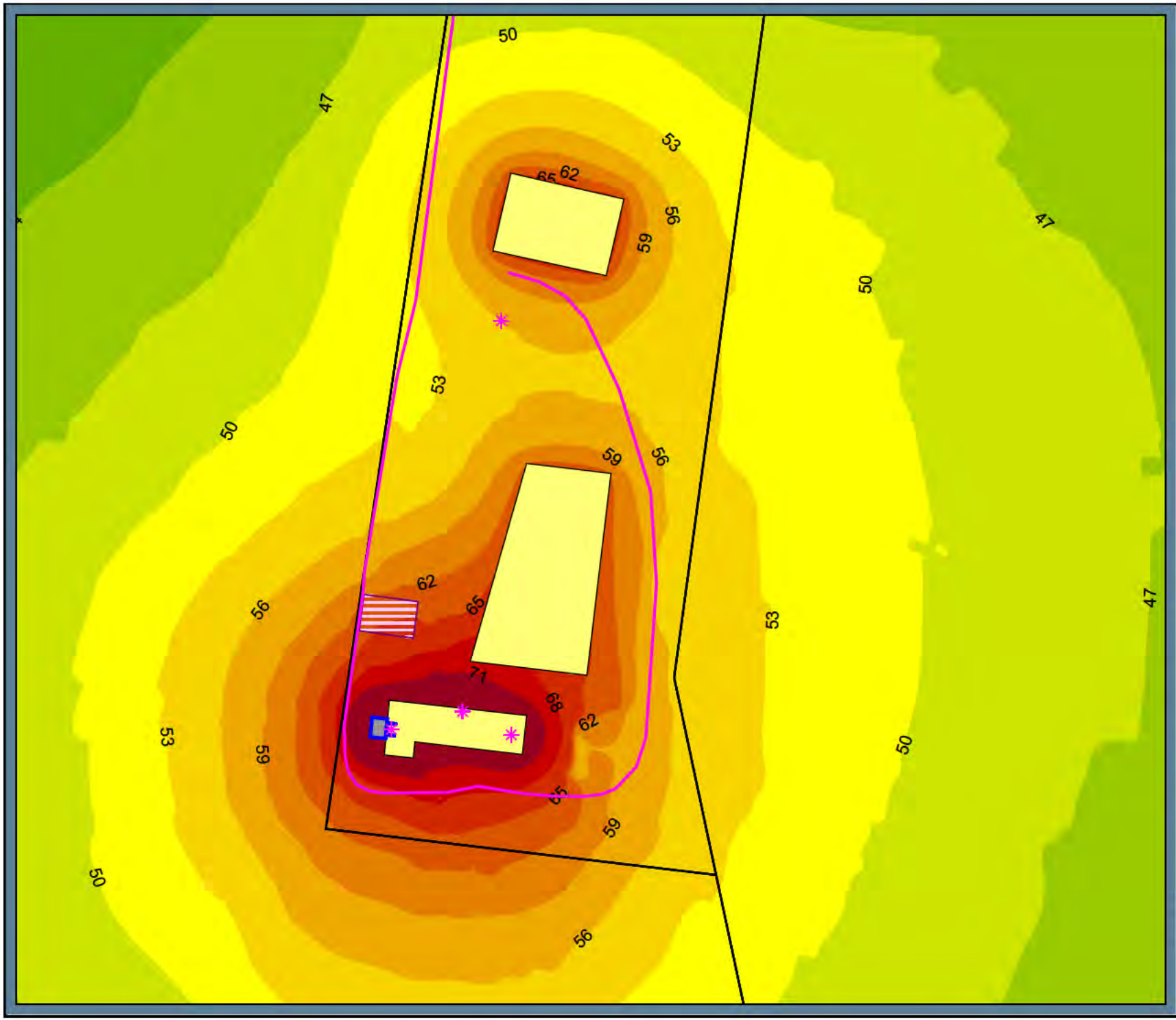
- Adjacent building
- Lot boundary
- Noise source (point)
- Area source
- Line Source
- Parking lot
- Industrial building; Room

**SCALE @ A4 1:6000**

0 25 50 100 150 200 250 m

N

Grid Spacing: 2m
Project Engineer: Felix Gau Rinaldi
Created: 18/08/2023
Processed with SoundPLAN 8.2




ATP230421

**Boonenne Timbers**

## Noise Levels Associated with Existing Development

## Ground Floor (1.8m AGL)

Operational Noise Level
$L_{eq,adj,1hr,\ Night}$ dB(A)

| | |
|---|---|
| | <= 32 |
| 32 < | <= 35 |
| 35 < | <= 38 |
| 38 < | <= 41 |
| 41 < | <= 44 |
| 44 < | <= 47 |
| 47 < | <= 50 |
| 50 < | <= 53 |
| 53 < | <= 56 |
| 56 < | <= 59 |
| 59 < | <= 62 |
| 62 < | <= 65 |
| 65 < | <= 68 |
| 68 < | <= 71 |
| 71 < | |

**Legend**

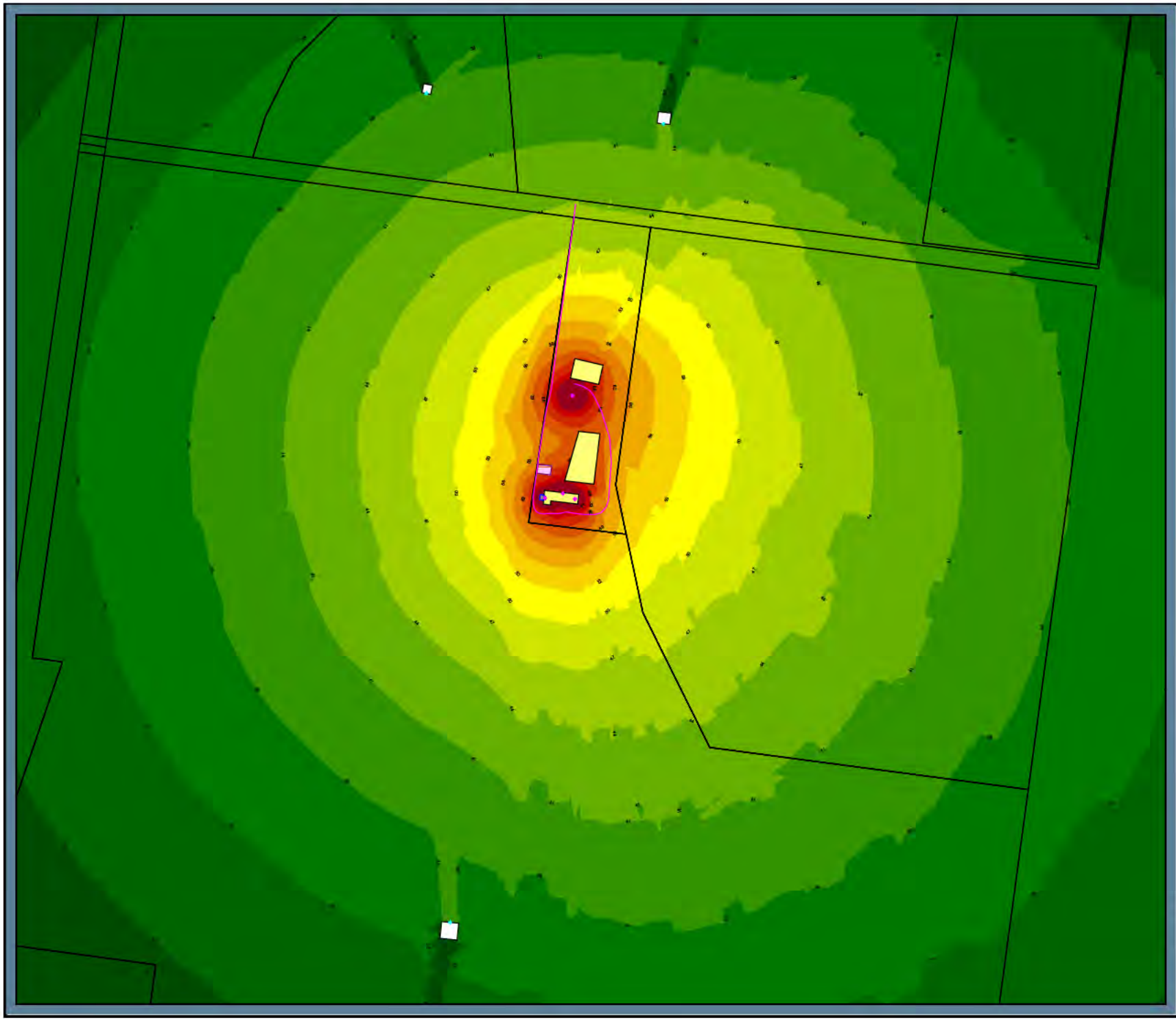
- Adjacent building
- Lot boundary
- Noise source (point)
- Area source
- Line Source
- Parking lot
- Industrial building; Room

**SCALE @ A4 1:1500**

0 5 10 20 30 40 50 m

N

Grid Spacing: 2m
Project Engineer: Felix Gau Rinaldi
Created: 18/08/2023
Processed with SoundPLAN 8.2



ATP230421

**Boonenne Timbers**

## Noise Levels Associated with Existing Development

## Ground Floor (1.8m AGL)

Operational Noise Level
$L_{eq,adj,11hr,\ Day}$ dB(A)

| | |
|---|---|
| | <= 32 |
| 32 < | <= 35 |
| 35 < | <= 38 |
| 38 < | <= 41 |
| 41 < | <= 44 |
| 44 < | <= 47 |
| 47 < | <= 50 |
| 50 < | <= 53 |
| 53 < | <= 56 |
| 56 < | <= 59 |
| 59 < | <= 62 |
| 62 < | <= 65 |
| 65 < | <= 68 |
| 68 < | <= 71 |
| 71 < | |

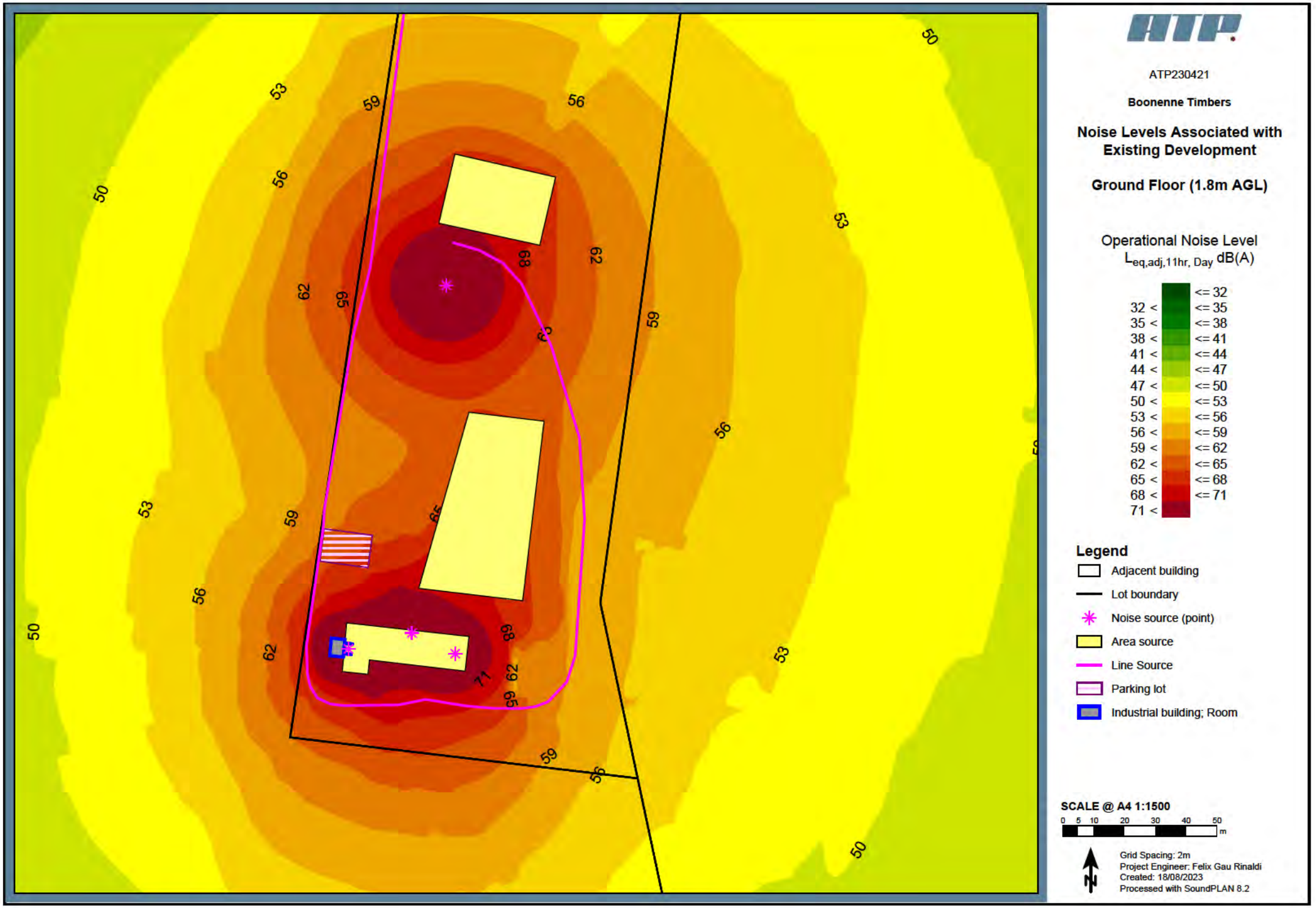
**Legend**

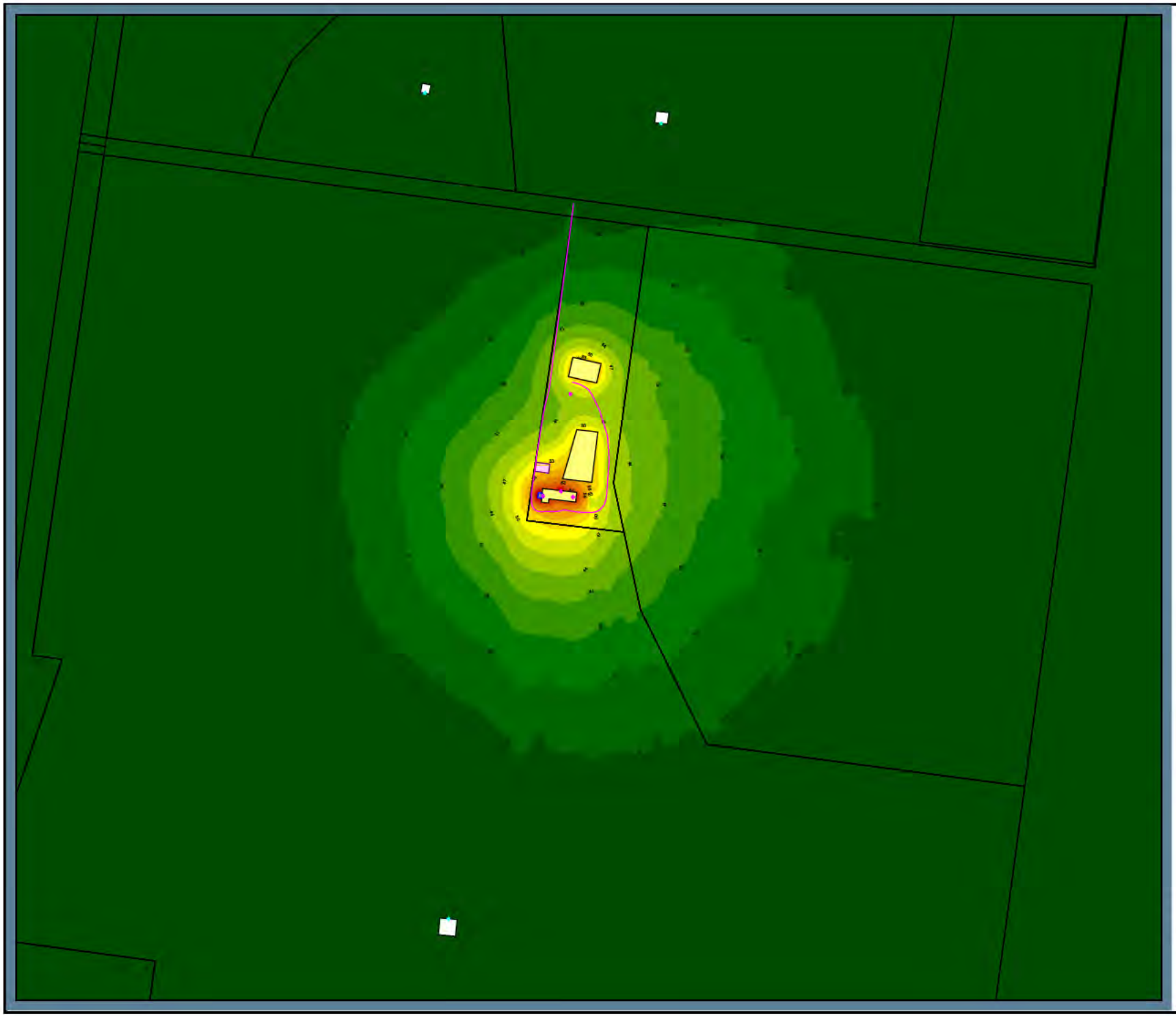
- Adjacent building
- Lot boundary
- Noise source (point)
- Area source
- Line Source
- Parking lot
- Industrial building; Room

**SCALE @ A4 1:6000**

0 25 50 100 150 200 250 m

Grid Spacing: 2m
Project Engineer: Felix Gau Rinaldi
Created: 18/08/2023
Processed with SoundPLAN 8.2


ATP230421
Boonenne Timbers
Noise Levels Associated with Existing Development
Ground Floor (1.8m AGL)
Operational Noise Level
$L_{eq,adj,11hr,\ Day}$ dB(A)
32 < <= 32
35 < <= 35
38 < <= 38
41 < <= 41
44 < <= 44
47 < <= 47
50 < <= 50
53 < <= 53
56 < <= 56
59 < <= 59
62 < <= 62
65 < <= 65
68 < <= 68
71 < <= 71
Legend
Adjacent building
Lot boundary
Noise source (point)
Area source
Line Source
Parking lot
Industrial building; Room
SCALE @ A4 1:1500
0 5 10 20 30 40 50 m
N
Grid Spacing: 2m
Project Engineer: Felix Gau Rinaldi
Created: 18/08/2023
Processed with SoundPLAN 8.2



ATP230421

**Boonenne Timbers**

## Noise Levels Associated with Existing Development

## Ground Floor (1.8m AGL)

Operational Noise Level
$L_{eq,adj,\ 9hr,\ Night}$ dB(A)

| | |
|---|---|
| | <= 32 |
| 32 < | <= 35 |
| 35 < | <= 38 |
| 38 < | <= 41 |
| 41 < | <= 44 |
| 44 < | <= 47 |
| 47 < | <= 50 |
| 50 < | <= 53 |
| 53 < | <= 56 |
| 56 < | <= 59 |
| 59 < | <= 62 |
| 62 < | <= 65 |
| 65 < | <= 68 |
| 68 < | <= 71 |
| 71 < | |

**Legend**

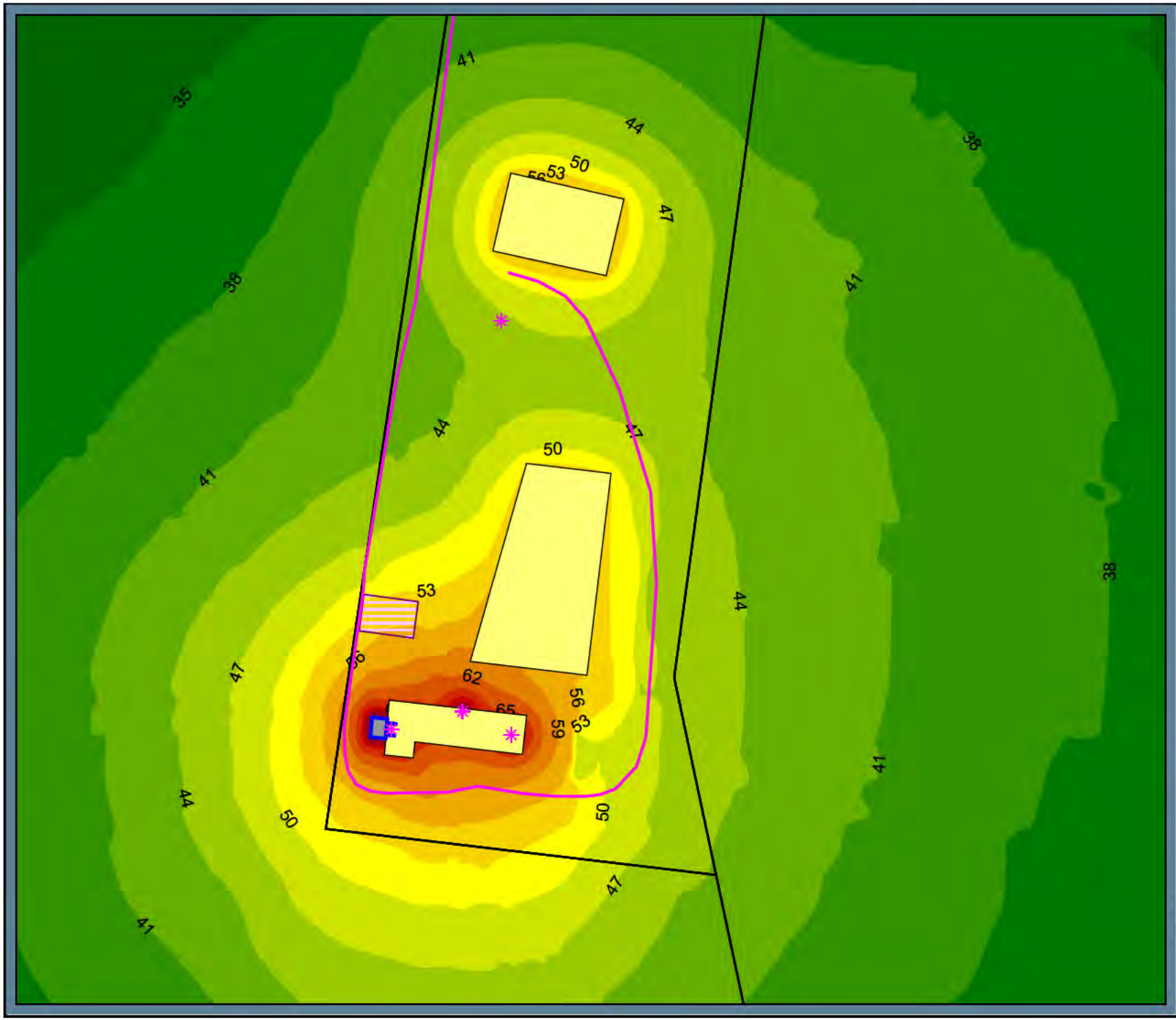
- Adjacent building
- Lot boundary
- Noise source (point)
- Area source
- Line Source
- Parking lot
- Industrial building; Room

**SCALE @ A4 1:6000**

0 25 50 100 150 200 250 m

N

Grid Spacing: 2m
Project Engineer: Felix Gau Rinaldi
Created: 18/08/2023
Processed with SoundPLAN 8.2




ATP230421

**Boonenne Timbers**

## Noise Levels Associated with Existing Development

## Ground Floor (1.8m AGL)

Operational Noise Level
$L_{eq,adj,\ 9hr,\ Night}$ dB(A)

| | |
|---|---|
| | <= 32 |
| 32 < | <= 35 |
| 35 < | <= 38 |
| 38 < | <= 41 |
| 41 < | <= 44 |
| 44 < | <= 47 |
| 47 < | <= 50 |
| 50 < | <= 53 |
| 53 < | <= 56 |
| 56 < | <= 59 |
| 59 < | <= 62 |
| 62 < | <= 65 |
| 65 < | <= 68 |
| 68 < | <= 71 |
| 71 < | |

**Legend**

- Adjacent building
- Lot boundary
- Noise source (point)
- Area source
- Line Source
- Parking lot
- Industrial building; Room

**SCALE @ A4 1:1500**

0 5 10 20 30 40 50 m

Grid Spacing: 2m
Project Engineer: Felix Gau Rinaldi
Created: 18/08/2023
Processed with SoundPLAN 8.2

# Appendix G – Acoustic Screening (Curtains)

# Flexshield
# SONICCLEAR INDUSTRIAL PVC - STRIP CURTAINS

**Durable, reliable, and efficient barrier solutions**

SonicClear PVC strip curtains are transparent curtains that are ideal for maintaining an ambient temperature for your warehouse. They also keep out dust/flies/pests, restrict the movement of air pollutants, and control noise.

Thanks to their clever design, SonicClear PVC strip curtains efficiently keep the temperature in your production area relatively stable by allowing smaller airflow.

## Why use PVC strip curtains and doors?

**They are durable**

The versatile and durable SonicClear PVC strip curtains can withstand massive amounts of force and scrapes, and won't break easily.

**They adhere to safety standards**

SonicClear PVC Strip curtains help reduce workplace accidents by allowing employees to check pathways for potential hazards before entering.

**They are more efficient**

Staff can pass through the screens without needing to open them up completely. Even small vehicles such as forklifts won't have difficulty getting through the curtains.

**They can keep pests out**

Investing in SonicClear PVC curtains helps you prevent pest and insect infestations. The curtains are heavy enough to keep pests from entering, while still being lightweight for humans to pass through.

SonicClear Industrial PVC strip curtains for grinding bays.

SonicClear Industrial PVC strip curtains.

flex SHIELD
Health, Safety, Productivity.

Manufacturing | Construction | Resources
Utilities | Education | Defence

## SonicClear strip curtain doors

These PVC strip curtain doors allow rapid access into and out of doorways without the need to open and close a swinging door.

## SonicClear strip curtain walls

Strip curtain walls divide work processes and, depending on your application, can stretch for a very long distance.

Your SonicClear PVC strip curtains are custom-made to suit your exact size and specifications. Flexshield can supply the easy-to-install curtains in kit form with step-by-step instructions, or we will gladly install them onsite. Once installed they provide immediate results.

Flexshield also manufacture a complete SonicClear support system that will cover all your fixing and support requirements.

## NATA tested for sound insulation

SonicClear is available in 2 mm, 4 mm and 6 mm thick options, all of which are NATA tested.

Testing is per Australian Standard 1191-2002, Acoustics: Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.

The weighted sound transmission index (Rw) is determined as specified in AS/NZS ISO 717.1-2004 Acoustics – Rating of sound insulation in buildings and building elements, Part I: Airborne Sound Insulation.

Ask us for your copy of the full NATA Attenuation test results.

## What is NATA testing?

NATA – the National Association of Testing Authorities – accredits organisations to perform testing and inspection activities for their products and services. This accreditation gives you the assurance you need to make safe, healthy and reliable choices.

SonicClear Industrial PVC strip curtains.

SonicClear Industrial PVC strip curtains for weather protection.

### Wonderful product and great service

"This is just a message to congratulate Flexshield on its wonderful product and great service. You were prompt in the manufacture and delivered when you said you would. We wouldn't hesitate to use this wash bay curtain in the future, and we would be using Flexshield to supply us."

Scott Freitag
Site Supervisor | Premier Building & Construction Pty Ltd

flex SHIELD
Health, Safety, Productivity.

# RESISTANCE OF FLEXSHIELD SONICCLEAR CURTAINS TO CHEMICALS

**Key - Chemical effect ratings**

- No effect - Excellent
- Moderate effect - Fair
- Minor effect - Good
- Severe effect - Poor

**Key**

- ● Satisfactory to 72°F
- ●○ Satisfactory to 120°F

| | PVC |
|---|---|
| Hydrochloric Acid 37% | ● |
| Hydrochloric Acid 100% | ●○ |
| Hydrocyanic Acid | ● |
| Hydrocyanic Acid (Gas 10%) | |
| Hydrofluoric Acid 20% | |
| Hydrofluoric Acid 100% | |
| Hydrofluosilicic Acid 20% | ●○ |
| Hydrofluosilicic Acid 100% | ● |
| Hydrogen Gas | ●○ |
| Hydrogen Peroxide 50% | ● |
| Hydrogen Peroxide 100% | ●○ |
| Hydrogen Sulfide (aqua) | ● |
| Hydrogen Sulfide (dry) | ●○ |
| Hydroxyacetic Acid 70% | |
| Iodine | |
| Isopropyl Acetate | |
| Isopropyl Ether | |
| Jet Fuel ($JP_3$, -4, -5) | ● |
| Kerosene | ●○ |
| Ketones | |
| Lacquers | |
| Lacquer Thinners | |
| Lactic Acid | ● |
| Lard | ● |
| Lead Acetate | ●○ |
| Lead Sulfamate | ●○ |
| Lime | ● |
| Lubricants | ●○ |
| Magnesium Carbonate | ●○ |
| Magnesium Chloride | ●○ |
| Magnesium Hydroxide | ●○ |
| Magnesium Nitrate | ●○ |
| Magnesium Sulfate | ●○ |
| Maleic Acid | ●○ |
| Malic Acid | ●○ |
| Mercuric Chloride (Dilute) | ●○ |
| Mercuric Cyanide | ●○ |
| Murcury | |
| Methanol (Methyl Alcohol) | ● |
| Methyl Acetate | |
| Methyl Alcohol 10% | ● |
| Methyl Bromide | |
| Methyl Butyl Ketone | |
| Methyl Cellosolve | ●○ |
| Methyl Chloride | |
| Methyl Dichloride | |
| Methyl Ethyl Ketone | |
| Methyl Isobutyl Ketone | |
| Methylene Chloride | |
| Milk | ●○ |
| Molasses | ●○ |
| Naphtha | |
| Naphthalene | |
| Nickel Chloride | ●○ |
| Nickel Sulfate | ●○ |

| | PVC |
|---|---|
| Nitric Acid (5-10%) | ● |
| Nitric Acid (20%) | ● |
| Nitric Acid (50%) | ● |
| Nitric Acid (concentrated) | |
| Nitrobenzene | |
| Corn | |
| Cotton Seed | ●○ |
| Creosote | |
| Dieselo Fuel (20, 30, 40, 50) | ●○ |
| Fuel (1, 2, 3, 5A, 5B, 6) | ●○ |
| Linseed | ●○ |
| Mineral | ● |
| Olive | |
| Pine | |
| Rosin | |
| Silicone | |
| Soybean | ● |
| Turbine | ● |
| Oleic Acid | ●○ |
| Oleum 25% | |
| Oleum 100% | |
| Oxaalic Acid (cold) | ● |
| Paraffin | ● |
| Pentane | |
| Perchloroethylene | ● |
| Petrolatum | |
| Phenol (10%) | ● |
| Phenol (Carbolic Acid) | ● |
| Phosphoric Acid (<40%) | ●○ |
| Phosphoric Acid (>40%) | ●○ |
| Phosphoric Acid (Crude) | ●○ |
| Photographic Developer | |
| Picric Acid | |
| Potash | |
| Potassium Bicarbonate | |
| Potassium Bromide | |
| Potassium Carbonate | |
| Potassium Chlorate | |
| Potassium Chloride | |
| Potassium Chromate | |
| Potassium Cyanide Solutions | |
| Potassium Dichromate | |
| Potassium Ferrocyanide | |
| Potassium Hydroxide (caustic potash) | ● |
| Potassium Nitrate | |
| Potassium Permanganate | ● |
| Potassium Sulfate | ●○ |
| Potassium Sulfide | ●○ |
| Propane (liquified) | ● |
| Propylene Glycol | ● |
| Pyridine | |
| Pyrogallic Acid | |
| Rosins | ● |
| Sea Water | ●○ |
| Silicone | |

| | PVC |
|---|---|
| Silver Nitrate | ● |
| Soap Solutions | |
| Sodium Acetate | ● |
| Sodium Bicarbonate | ●○ |
| Sodium Bisulfate | ●○ |
| Sodium Bisulfite | ●○ |
| Sodium Borate | ●○ |
| Sodium Carbonate | ●○ |
| Sodium Chlorate | ● |
| Sodium Chloride | ●○ |
| Sodium Cyanide | ●○ |
| Sodium Fluoride | ●○ |
| Sodium Hydroxide (20%) | |
| Sodium Hydroxide (50%) | |
| Sodium Hydroxide (80%) | |
| Sodium Hypochlorite (20%) | |
| Sodium Hypochlorite (100%) | ●○ |
| Sodium Metaphosphate | ●○ |
| Sodium Metasilicate | |
| Sodium Nitrate | ●○ |
| Sodium Perborate | ●○ |
| Sodium Polyphosphate | ● |
| Sodium Silicate | ●○ |
| Sodium Sulfate | ●○ |
| Sodium Sulfide | ●○ |
| Sodium Tetraborate | ●○ |
| Sodium Thiosulfate (hypro) | ●○ |
| Stannic Chloride | ●○ |
| Stannous Chloride | ●○ |
| Sulfur Dioxide | ●○ |
| Sulfur Dioxide (Dry) | ●○ |
| Sulfur Trioxide (Dry) | ● |
| Sulfuric Acid (<10%) | ● |
| Sulfuric Acid (10-75%) | ● |
| Sulfurous Acid | ●○ |
| Tannic Acid | ● |
| Tanning Liquors | ● |
| Tartaric Acid | ● |
| Tomato Juice | |
| Urine | |
| Vinegar | ●○ |
| Water, Acid, Mine | ●○ |
| Water, Distilled | ●○ |
| Water, Fresh | ●○ |
| Water, Salt | ●○ |
| Whiskey and Wines | ●○ |
| White Liquor (Pulp Mill) | ●○ |
| Xylene | |
| Zinc Chloride | |
| Zinc Sulfate | ●○ |

*Does not include the track.

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# REPORT ON THE DETERMINATION OF AIRBORNE SOUND TRANSMISSION LOSS IN ONE-THIRD OCTAVE BANDS AND WEIGHTED SOUND REDUCTION INDEX ($R_w$) OF A 4mm SONICCLEAR STRIP CURTAIN WITH 120mm OVERLAPS.

| | |
|---|---|
| Testing Procedure: | AS 1191-2002 |
| Testing Laboratory: | Applied Acoustics Laboratory<br>RMIT University, Applied Physics Discipline<br>Melbourne, Victoria 3000, Australia<br>NATA Accreditation Number 1421 |
| Client: | Flexshield<br>40 Sowden Street<br>Drayton, Queensland<br>Australia 4350 |
| Date of Test: | 15/03/2006 |
| Date of Report: | 28/03/2006 |
| Report Number: | 121I/06-010/PD |
| Testing Officer: | Peter Dale |

Peter Dale
Approved NATA Signatory

NATA
WORLD RECOGNISED
ACCREDITATION

# REPORT ON THE DETERMINATION OF AIRBORNE SOUND TRANSMISSION LOSS IN ONE-THIRD OCTAVE BANDS AND WEIGHTED SOUND REDUCTION INDEX ($R_w$) OF A 4mm SONICCLEAR STRIP CURTAIN WITH 120mm OVERLAPS.

## 1 INTRODUCTION

The test described in this report was carried out at the request of Flexshield. on the 15th of March 2006 to determine the airborne sound transmission loss and the weighted sound transmission index ($R_w$) of a 4mm SonicClear strip curtain with 400mm panels with 120mm overlaps.

The test has been carried out using the pair of sound transmission rooms of the Applied Physics Discipline, RMIT University. The sample under test is mounted in the vertical aperture between a reverberant source room and a reverberant receiving room.

The sound pressure level difference resulting between these two rooms when a sound source operates in the source room is used in conjunction with the surface area of the sample and the equivalent absorption area of the receiving room to determine the airborne sound transmission loss of the sample.

Testing has been carried out in accordance with Australian Standard 1191-2002, Acoustics: Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions. The weighted sound transmission index ($R_w$) has been determined as specified in AS/NZS ISO 717.1-2004 Acoustics – Rating of sound insulation in buildings and of building elements, Part I: Airborne Sound Insulation.

The measuring facilities and method have been accredited by the National Association of Testing Authorities, Australia (NATA) Accreditation No. 1421, and testing has been conducted fully in accordance with those terms of accreditation.

## 2. TEST FACILITIES

The sound transmission suite consists of a reverberant source room volume of 115.82 cubic metres and a reverberant receiving room of volume 114.73 cubic metres. Both rooms have an irregular geometry featuring a pentagonal floor plan with no two walls parallel, and with non-parallel floors and ceilings. The rooms are constructed of 305mm reinforced concrete, supported on laminated-rubber isolators, and acoustically de-coupled from one another by a 50mm closed cell polyurethane gasket.

The irregular room shape has been chosen to assist in the production of diffuse sound fields. Such diffuseness is further enhanced:

(a) In the receiving room by the inclusion of nine fixed non-rectangular panels, suspended in the room with random orientation. Six panels each have an area of 1.44 square metres and three each have an area of 1.67 square metres. The total one-sided area of these panel diffusers is 13.65 square metres, being 55.7% of that of the largest single boundary surface (the ceiling).

(b) In the source room by inclusion of nine fixed non-rectangular polyvinyl chloride panels suspended in the room with random orientation. Four panels each have an area 1.86 square metres, the other five each have an area 1.24 square metres. The total one-sided area of these panel diffusers is 13.64 square metres, being 56.5% of that of the largest single boundary surfaces (the ceiling).

The average sound absorption coefficient of the diffusers and the internal surfaces of the rooms is below 0.06 in each test frequency band.

## 3. EQUIPMENT

The equipment used in performing this test is listed below.

| | |
|---|---|
| Real Time Analyser | Bruel & Kjaer Type 2133 S/N 1570243 |
| Measuring Amplifier | Bruel & Kjaer Type 2610 S/N 1646952 |
| Microphone Rx Room | Bruel & Kjaer Type 4192 S/N 2114482 |
| Microphone Preamplifier RX Room | GRAS Type 26AK S/N 21137 |
| Microphone Power Supply RX Room | Bruel & Kjaer Type 2804 S/N 619032 |
| Microphone Tx Room | Bruel & Kjaer Type 4192 S/N 2114481 |
| Microphone Power Supply TX Room | Bruel & Kjaer Type 2804 S/N 684339 |
| Microphone Preamplifier TX Room | Bruel & Kjaer Type 2369 S/N 1748672 |
| Band-pass Filter Set | Rockland Wavetek Type 852 |
| Amplifier | Yamaha Type AX-500 S/N M53342910 |
| Speakers | Lorantz Audio |

## 4. PROCEDURES

Testing has been conducted in accordance with the methods of AS1191:2002 – Acoustics: Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.

Random noise is fed to a single loudspeaker placed in a corner of the source room. In each one-third octave band of centre frequency 100 to 5000Hz, the mean sound pressure level in each room is found by the use of a microphone connected to a Bruel & Kjaer 2133 real time analyser. Seven independent locations of the microphone are used in each room, with the signals temporally averaged for the sampling time of 128 seconds.

The equivalent absorption area of the receiving room is determined by measurement of the reverberation time in each one-third octave band, a loudspeaker is placed in one corner of the receiving room. Seven microphone positions are chosen, with eight decays obtained at each position, between 100 and 5000Hz. The microphone signal is relayed via a microphone amplifier, to a Bruel & Kjaer 2133 Real Time Analyser. The analyser is interfaced to a personal computer. A program running on the personal computer allows the determination of the reverberation time from the sound decays in accordance with AS1045:1988 - Acoustics: Measurements of Sound Absorption in a Room.

The measuring equipment has been calibrated by an external accredited calibration laboratory, and is in current calibration.

## 5 SAMPLE DESCRIPTION.

The test specimen was clear PVC curtain described as follows: 400 x 4 SonicClear panels with a 120mm overlap mounted on a 500 Series Acoustic Track.

The 500 series Acoustic Track was mounted horizontally on the upper vertical face of the test aperture on the receive room side. The curtain comprised of 400mm wide and 4mm thick panels. These panels were hung vertically from the 500 Series Acoustic Track. The panels were installed to provide a 120mm overlap with the previous panel. The panels drop was approximately 50mm longer than the aperture opening to allow sealing against the base of the aperture.

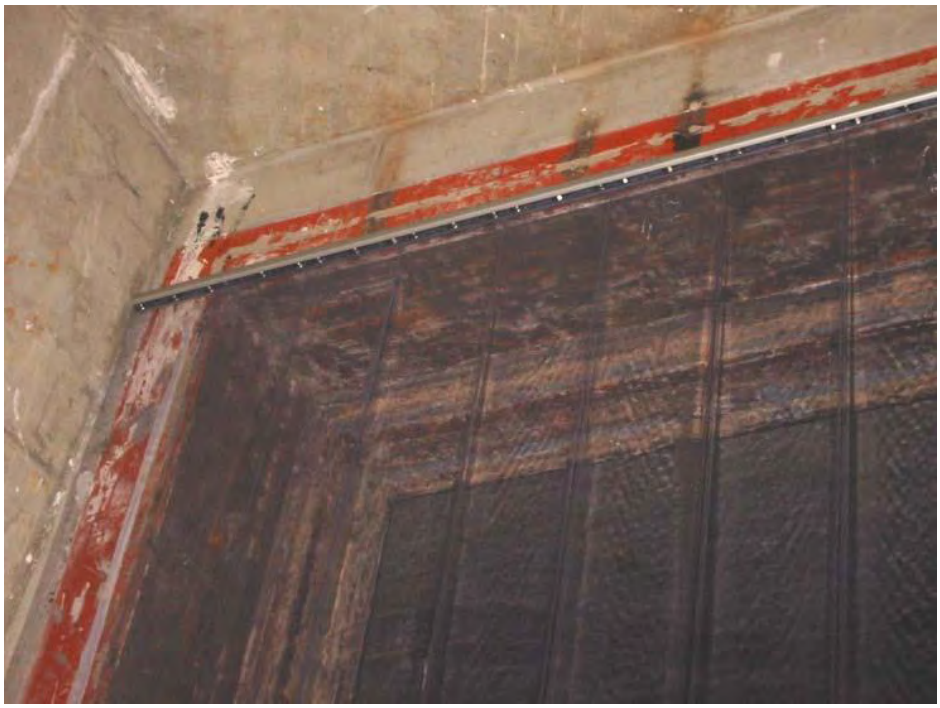
The nominal surface density of the 4mm SonicClear panels is 4.88

$kg/m^2$. Pictures 1 to 3 show curtain installation.

Picture 1: Curtain Sample mounted in test aperture.

Picture 2: View of Panel overlap.


Picture 3: Mounting of 500 Series Acoustic Track.



## 6. RESULTS

The measured airborne sound transmission loss, R dB, at each one-third octave bandwidth of centre frequencies between 100 – 5000 Hz is given in tubular form to the nearest decibel. The Weighted Sound Reduction Index ($R_w$) reference curve, in each one-third octave bandwidth of centre frequencies between 100 and 3150Hz are expressed in tabular form and are also represented graphically for the sample tested. There are no significant errors in transmission loss values due to flanking transmission, filler wall. The Weighted Sound Reduction Index of the sample is determined in accordance with AS/NZS ISO 717.1-2004.

The precision in the results is expressed as the 95% confidence interval in the determined sound transmission loss. The K value used to determine the 95% confidence interval is 2.5. This interval is estimated from the 95% confidence interval in each of the average source room level, the average receiving room level and the receiving room absorption/surface area of sample. These values are included in the table of results.

**6.1** Sample - Test Conditions

| | |
|---|---|
| Temperature: | Receive Room : $23.0^0$C.<br>Send Room : $23.0^0$C. |
| Humidity: | Receive Room : 53%.<br>Send Room : 53%. |
| Sample Surface Area: | 10.69 $m^2$ |
| Room Volumes: | Receive room : 115.74 $m^3$.<br>Source room : 121.61. $m^3$. |
| Date of test: | 15/03/2006 |

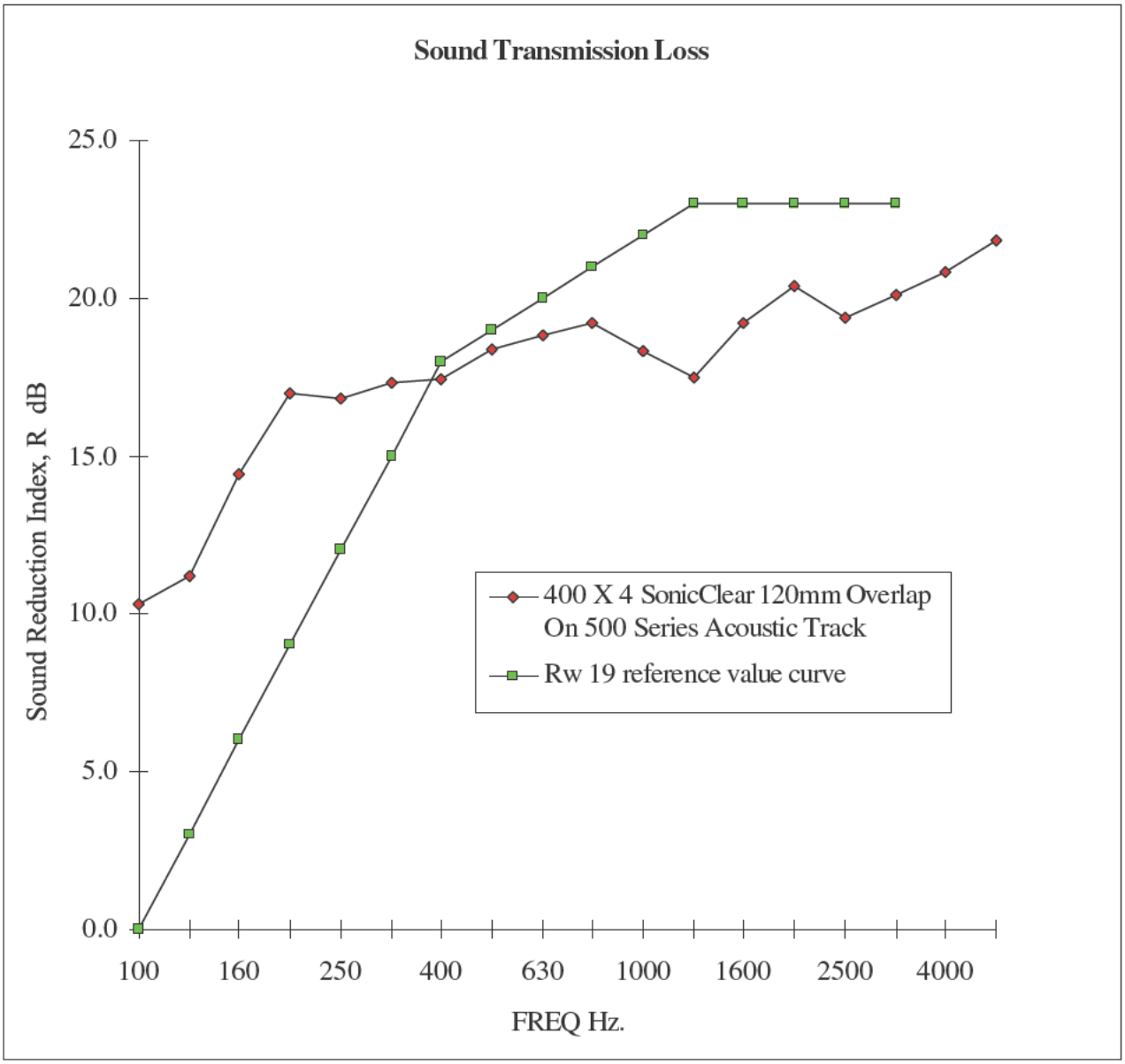
**6.2** Sound Transmission Loss Results and Weighted Sound Reduction Index $R_w$:

The Weighted Sound Reduction Index of the test curtain is: $R_w$ ($C;C_{tr}$) = 19(0;-1).
Based on laboratory measurements. Rating determined in accordance with AS/NZS ISO 717.1-2004

**Table I:** Table of results for the 400 x 4 SonicClear panels with a 120mm overlap mounted on a 500 Series Acoustic Track.

| 1/3 Octave Centre Frequency Hz | Sound Transmission Loss : R dB | $R_w$ 19 Reference Curve | 95% Confidence levels, dB. |
|---|---|---|---|
| 100 | 10.3 | 0 | 3.5 |
| 125 | 11.2 | 3 | 2.7 |
| 160 | 14.4 | 6 | 1.4 |
| 200 | 17.0 | 9 | 1.3 |
| 250 | 16.8 | 12 | 1.4 |
| 315 | 17.3 | 15 | 0.8 |
| 400 | 17.4 | 18 | 0.8 |
| 500 | 18.4 | 19 | 1.0 |
| 630 | 18.8 | 20 | 1.1 |
| 800 | 19.2 | 21 | 0.7 |
| 1000 | 18.3 | 22 | 0.6 |
| 1250 | 17.5 | 23 | 0.6 |
| 1600 | 19.2 | 23 | 0.6 |
| 2000 | 20.4 | 23 | 0.5 |
| 2500 | 19.4 | 23 | 0.5 |
| 3150 | 20.1 | 23 | 0.5 |
| 4000 | 20.8 | - | 0.5 |
| 5000 | 21.8 | - | 0.5 |

**Chart I:** Graph of results for the 400 x 4 SonicClear panels with a 120mm overlap mounted on a 500 Series Acoustic Track.



# Noise Impact Assessment

# Boonenne Timbers

## 157 Boonenne Road, Goodger

Boonenne Timbers

Project No.: ATP250121

Project Name: Boonenne Timbers

Document No.: ATP250121-R-NIA-01

January 2025

# Document Control Record

| | |
|---|---|
| Prepared by: | Felix Gau Rinaldi |
| Position: | Engineer – Acoustics |
| Signed: |  |
| Date: | 16 January 2025 |

| | |
|---|---|
| Approved by: | Sasho Temelkoski<br>RPEQ 13551 |
| Position: | Managing Director |
| Signed: |  |
| Date: | 16 January 2025 |

REVISION STATUS

| Revision No. | Description of Revision | Date | Approved |
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# Executive Summary

ATP Consulting Engineers (ATP) was engaged to prepare a noise impact assessment (NIA) report in support of the Negotiated Decision to the existing development approval, to increase the hours of operation for the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger.

As part of the existing development, approval was given to the timber milling and woodchipping facility for the following key aspects:

- Hours of operations for the High Impact Industry are to be strictly in accordance with the following:
    - Monday to Friday – 6.00am to 5.00pm
    - Saturday (and public holidays) – 7.00am to 12.00pm (noon)
- The timber milling and woodchipping facility operates under the Environment Relevant Activity ERA 47 - *Timber milling and shredder (b) 10,000t to 20,000t per year.*

Approval is being sought to increase the hours of operation of the development to align with the approved hours of operation as per Condition G1 of the existing environmental authority (EA) permit. The proposed hours of operation for the timber milling and woodchipping facility, as per the existing EA permit, are as follows:

- Monday to Saturday – 6.00am to 6.00pm
- Chainsaw operations must not occur before 7.00am and after 6.00pm Mondays to Saturdays (and public holidays)
- Deliveries and removals by heavy vehicles between 7.00am and 6.00pm Mondays to Saturdays.
- Public Holidays – 6.00am to 3.00pm (no chainsaws before 7.00am)
- Sundays – Maintenance works only (as required)

The purpose of this report is to remove discrepancies between the hours of operations presented in the development approval and EA permit.

Noise impact assessment is required to assess the potential noise impacts from the increase of hours of operation of the development on the nearest noise sensitive places in accordance with the South Burnett Regional Council *Planning Scheme 2017* and the *Environmental Protection (Noise) Policy 2019*.

Detailed noise propagation modelling was carried out considering all potential noise emissions from the operation of the proposed timber milling and woodchipping facility at 157 Boonenne Road in Goodger to determine the potential noise impact on the nearest noise sensitive places.

The noise sources and operational scenarios included in this report have been considered based on the scale and intensity of the operations at the existing timber milling and woodchipping facility, as no changes are expected to the noise sources at 157 Boonenne Road in Goodger. The dominant noise sources are located at the covered work area, and these include noise from the circular saw and shredder. Other noise sources include delivery and dispatch of materials (truck movements), forklifts and staff and visitor parking.

The relevant noise criteria from the *Environmental Protection (Noise) Policy 2019* and the relevant general development provisions in accordance with the *South Burnett Regional Council Planning Scheme* were considered in this assessment.

The nearest noise sensitive residential receptors to the site are the low-set dwellings along Boonenne Road. However, it is to be noted that the dwellings are mostly used in association with rural activities or for commercial operations, rather than as dwellings.

The results of the conservative noise propagation modelling indicate that there will be no noise impacts on the nearest noise sensitive land uses, mainly because the most dominant noise sources are located at the covered area, which is at the back of the development, approximately 330 metres from Boonenne Road and approximately 450 metres from the nearest noise sensitive use at 156 Boonenne Road.

**Noise Mitigation Measures**

To ensure ongoing compliance with the noise criteria at the nearest noise sensitive receptors, the following mitigation measures are recommended:

- Acoustic screen in a form of industrial PVC – Strip curtains such as *Flexishield* or similar are required for the openings (end of the conveyor belt course) on the eastern façade of the shredder shed to prevent noise impact on the nearest noise sensitive places.
- The acoustic screens (curtains) should be minimum 4mm thick and with 100 to 120mm overlaps. The weighted sound reduction index should be minimum $R_w$ 18. Examples of the acoustic screens (curtains) are presented in Appendix G.
- The chainsaws should not be used during night time / early morning (6:00am to 7:00am).
- Maintenance of the blades of the circular saws should be done regularly to maintain good cutting conditions and reduce noise generated by damaged equipment.
- Mobile plant to be fitted with broadband reversing beepers. All reversing beepers should meet the relevant occupational safety requirements. This should be implemented for plant operating during night-time hours where reasonable and practicable.
- Use mufflers and engine covers/screens where appropriate for generators and mobile plant.
- Care should be taken to reduce noise when loading or unloading vehicles or moving materials. Minimise drop height of materials when transferring (e.g loading and unloading vehicles and storage areas).

Provided the recommendations of this report are fully implemented, there are no further acoustic constraints on the increase of the hours of operation of the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger.

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## Tables



## Figures



## Appendices

## Acoustics Glossary

| | |
|---|---|
| **A-weighting** | Correction to sound levels to mimic the response of the human ear at low sound frequencies. A-weighting filter covers the full audio range - 20 Hz to 20 kHz and the shape mimics the response of the human ear at the lower frequency levels. |
| **Decibel (dB)** | (1) Degree of loudness (2) A unit for expressing the relative intensity of sounds on a scale from zero for the average least perceptible sound to about 130 for the average pain level. A unit used to express relative difference in power or intensity, between two acoustic signals, equal to ten times the common logarithm of the ratio of the two levels, one of which is a standard reference value. |
| **dB(A)** | The A-weighted sound pressure level in dB. |
| **Façade adjusted** | The noise level at 1m from a building façade is calculated by adding 2.5dB to the free-field noise level to account for sound reflected from the building façade. The external noise levels at the buildings facades are "façade-adjusted". |
| **Free-field** | Noise level without any reflected sound from buildings or other hard, reflective surfaces (except for the ground plane). |
| **Hz (Hertz)** | Hertz is the standard measure of the frequency of oscillations in a wave motion. The frequency is most often measured in cycles per second (cps) or Hertz (Hz). Frequency of 1 Hz is one cycle per second. |
| **Impulsive noise and impulsiveness adjustment** | Noise having a high peak of short duration or a sequence of such peaks. Impulsive noise is present if the difference in A-weighted maximum noise levels between fast response and impulse response is greater than 2dB. Impulsiveness adjustment (penalty) of up to 5dB should be applied to the component noise level. |
| **$L_{Amax,T}$** | The maximum A-weighted sound pressure level occurring in a specified time period T in seconds. |
| **$L_{Aeq,T}$** | "Average-energy" sound level used in situations where sound varies over time. $L_{Aeq,T}$ is the A-weighted sound pressure level that has the same energy as the fluctuating sound over the time period T in seconds. |
| **$L_{A1,T}$** | Measure of the maximum sound level. $L_{A01,T}$ is a statistical parameter that is the A-weighted sound pressure level that is exceeded for 1% of the measurement time T. |
| **$L_{A10,T}$** | $L_{A10,T}$ is a statistical parameter that is the A-weighted sound pressure level that is exceeded for 10% of the measurement time T. Used as a traffic noise descriptor in Queensland. |
| **$L_{A90,T}$** | Background sound level. $L_{A90,T}$ is a statistical parameter that is the A-weighted sound pressure level that is exceeded for 90% of the measurement time T. |
| **Noise** | Unwanted sound. |
| **Octave bands and 1/3 octave bands** | A range of frequencies whose upper frequency limit is twice that of its lower frequency limit. In acoustics, the audible spectrum (20Hz to 20kHz) is divided into 10 parts |

| | |
|---|---|
| | (octaves) with centre frequencies of 31.5Hz, 63Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz, 8kHz and 16kHz.<br><br>For more detailed frequency analysis, octave bands are further divided into more discrete bands. For examples, 1/3 octaves bands are where each octave band is divided into three parts.<br><br>IEC 61260:1995, *Electroacoustics — Octave-band and fractional-octave band filters* |
| **Sound power** | The sound energy radiated per unit time by a sound source, measured in Watts (W). |
| **Sound Power Level, $L_w$ (SWL)** | Logarithmic measure of sound power on a decibel scale, referenced to the human hearing threshold of $1 \times 10^{-12}$ W. |
| **Sound pressure** | The fluctuations in air, measured in Pascals (Pa). |
| **Sound Pressure Level, $L_p$ (SPL)** | Logarithmic measure of sound pressure on a decibel scale, referenced to the human hearing threshold of $2 \times 10^{-5}$ Pa. |
| **Tonal noise, tonality, and tonality adjustment** | Tonal noise is characterised by one or more distinct frequency components (“tones”) that emerge audibly from the total sound. For example, distinct tones may be emitted by fans, saws, grinders, and other equipment. Tonal noise is generally far more annoying than non-tonal noise. Presence of tonal sound (“tonality”) can be identified by analysing the sound levels in adjacent 1/3 octave bands.<br><br>AS1055.1-1997 and the DEHP Noise Measurement Manual 2013 provides guidance on how tonality should be assessed. If tonal components are clearly audible and they can be detected by 1/3 octave analysis (1/3 octave band exceeds neighbouring bands by at least 5dB), tonality adjustment (penalty) of up to 5dB should be applied to the component noise level. |
| **Weighted Sound Reduction Index ($R_w$)** | A single-number quantity which characterises the airborne sound insulation of a material or building element over a range of frequencies. |

# 1. Introduction

## 1.1 Project Background

ATP Consulting Engineers (ATP) was engaged to prepare a noise impact assessment (NIA) report in support of the Negotiated Decision to the existing development approval, to increase the hours of operation for the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger.

As part of the existing development, approval was given to the timber milling and woodchipping facility for the following key aspects:

- Hours of operations for the High Impact Industry are to be strictly in accordance with the following:
    - Monday to Friday – 6.00am to 5.00pm
    - Saturday (and public holidays) – 7.00am to 12.00pm (noon)
- The timber milling and woodchipping facility operates under the Environment Relevant Activity ERA 47 - *Timber milling and shredder (b) 10,000t to 20,000t per year.*

Approval is being sought to increase the hours of operation of the development to align with the approved hours of operation as per Condition G1 of the existing environmental authority (EA) permit. The proposed hours of operation for the timber milling and woodchipping facility, as per the existing EA permit, are as follows:

- Monday to Saturday – 6.00am to 6.00pm
- Chainsaw operations must not occur before 7.00am and after 6.00pm Mondays to Saturdays (and public holidays)
- Deliveries and removals by heavy vehicles between 7.00am and 6.00pm Mondays to Saturdays.
- Public Holidays – 6.00am to 3.00pm (no chainsaws before 7.00am)
- Sundays – Maintenance works only (as required)

The purpose of this report is to remove discrepancies between the hours of operations presented in the development approval and EA permit.

Noise impact assessment is required to assess the potential noise impacts from the increase of hours of operation of the development on the nearest noise sensitive places in accordance with the South Burnett Regional Council *Planning Scheme 2017* and the *Environmental Protection (Noise) Policy 2019.*

## 1.2 Study Objectives

Study objectives are as follows:

- Noise measurements using an automated noise logger to obtain data on the existing background noise levels.
- Extensive noise survey of the site to determine the noise emissions from each individual noise source and the noise levels at the boundaries of the site.
- Noise propagation modelling, considering typical noise emissions associated with the use of the proposed facility to calculate the noise levels at the nearest noise sensitive places.
- Assessment of the noise levels against the relevant noise criteria from the *Environmental Protection (Noise) Policy 2019*.
- Recommendation of noise mitigation measures to prevent noise impacts on the nearest noise sensitive places (if required).

## 1.3 Subject Site

The existing timber milling and woodchipping facility is located at 157 Boonenne Road in Goodger, on the land described as Lot 4 on RP807137

The site is located within the South Burnett Regional Council (SBRC) local government area and is presented in Figure 1.1.

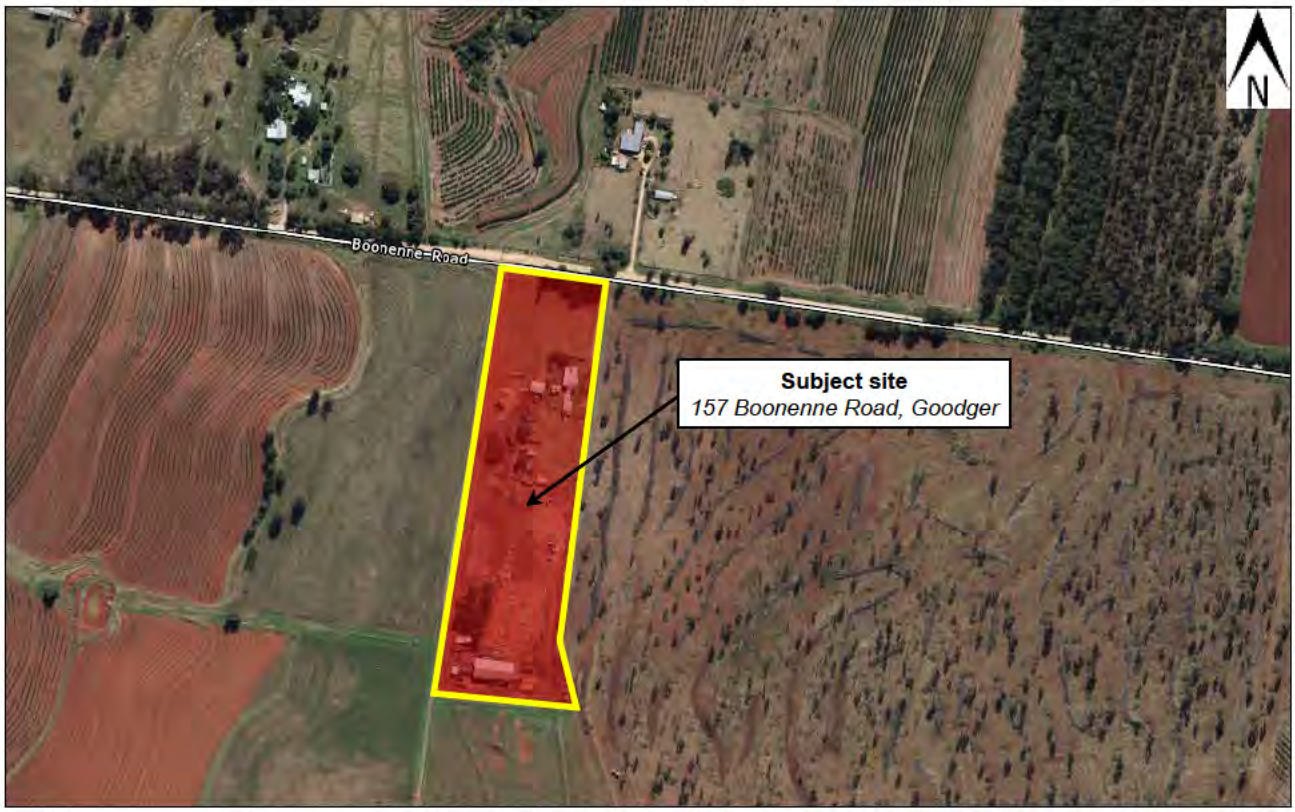



**Figure 1.1 Site location**

The proposed sawmill will include the following activities and operations:

- Delivery and storage of sawn hardwood logs;
- Timber cutting and storage; and
- Dispatch and other activities such as office space for sales and administration and workshop.

The proposed hours of operation for the timber milling and woodchipping facility are as follows:

- Monday to Saturday – 6.00am to 6.00pm
- Chainsaw operations must not occur before 7.00am and after 6.00pm Mondays to Saturdays (and public holidays)
- Deliveries and removals by heavy vehicles between 7.00am and 6.00pm Mondays to Saturdays.
- Public Holidays – 6.00m to 3.00pm (no chainsaws before 7.00am)
- Sundays – Maintenance works only (as required)

The approved development layout of the subject site is presented in Appendix A.

## 1.4 Nearest Noise Sensitive Places

The definition of "noise sensitive place" considered by DES includes a sensitive receptor for the purposes of the *EPNP 2019*. The definition of "sensitive receptor" stated in the *EPNP 2019* is: "sensitive receptor means an area or place where noise is measured". The types of sensitive receptors are listed in Schedule 1 of *EPNP 2019* and include residences, libraries and educational institutions, childcare centres, hospitals, and other medical institutions and commercial or retail activities.

The nearest noise sensitive residential receptors to the site are the low-set dwellings across Boonenne Road and to the south of the development. The nearest noise sensitive places to the development at 157 Boonenne Road are listed in Table 1.1.

**Table 1.1 Nearest noise sensitive places**

| Street address | Type | Zoning |
|---|---|---|
| No. 156 Boonenne Road | Low-set dwelling | Rural |
| No. 169 Boonenne Road | Low-set dwelling | Rural |
| No. 186 Boonenne Road | Low-set dwelling | Rural |

As per the South Burnett Regional Council Planning Scheme V2.0 (2017), the site is zoned *Rural*, with the surroundings zoned as *Rural*.

The nearest noise sensitive places are identified in Figure 1.2, overlaid over the zoning map from the *South Burnett Regional Council Planning Scheme*.

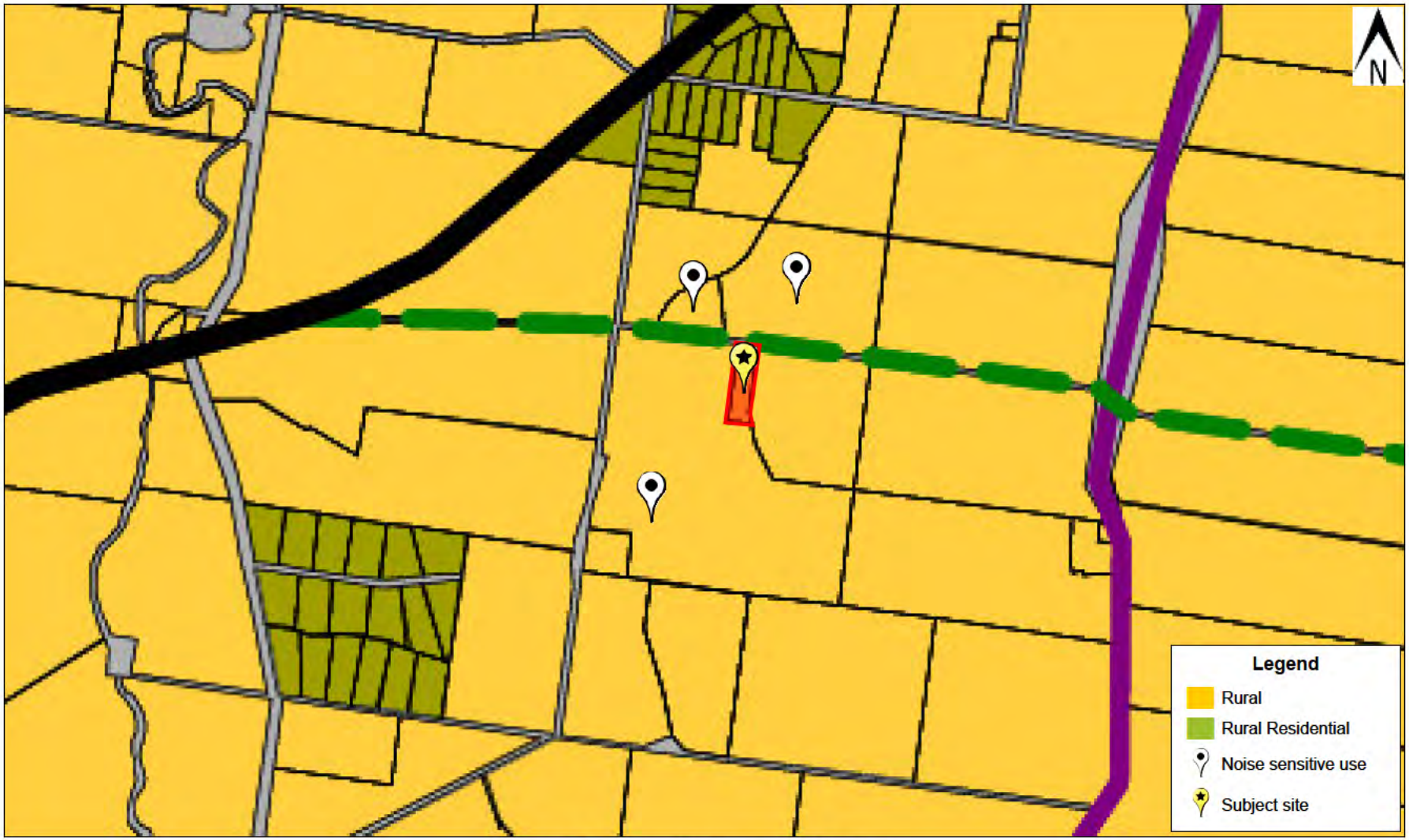



Figure 1.2 Nearest noise sensitive places

# 2. Existing Noise Amenity

## 2.1 Site-Specific Noise Measurements

Background noise monitoring was carried out in the period from 21 June to 1 July 2023 using an automated noise logger deployed along the southern boundary of Lot 3 on RP15595, No. 156 Boonenne Road, to record the background noise levels representative of the noise amenity at the nearest noise sensitive places.

In addition, a noise survey was carried out at the existing timber milling and woodchipping facility on 21 June 2023 (Wednesday).

The noise measurement methodology is summarised in Table 2.1.

**Table 2.1 Noise measurements**

| | |
|---|---|
| **Relevant legislation, standards, and guidelines** | The noise measurements were carried out in accordance with:<br>• Australian Standard AS 1055:2018 (*Acoustics – Description and measurement of environmental noise*).<br>• DES *Noise Measurement Manual v. 4.1*, 10 March 2020 |
| **Measurement location** | The background noise measurements were carried out along the southern boundary of Lot 3 on RP15595, No. 156 Boonenne Road, as presented in Figure 2.1.<br>The noise survey locations are presented in Figure 2.2<br>Photos showing the noise measurement locations are presented in Appendix B. |
| **Measurement period** | Continuous background noise monitoring was carried out along Boonenne Road in Goodger, 24 hours a day from 21 June to 1 July 2023.<br>Noise survey at the timber milling and woodchipping facility was carried out between 11:00am and 1:00pm on 21 June 2023 (Wednesday), while standard operations were taking place at the facility. |
| **Measurement equipment** | The following sound measurement equipment was used:<br>• Environmental noise logger – ARL Ngara (Serial No. 8780D2);<br>• Sound level meters – SVAN 977A (serial no. 92109 and 92176); and<br>• Calibration – RION NC-75 Sound Level Calibrator (serial no. 34413140).<br>The noise measurement instruments conform to Australian Standard AS/NZS IEC61672.1-2019. Calibration was performed during set up and download of the data from the noise logger. The calibration drift was <0.1 dB(A). |
| **Meteorological conditions** | The weather conditions during the monitoring period from 21 June to 1 July 2023 were mostly fine, no inclement weather was recorded on this period.<br>Full meteorological data for the noise monitoring period is presented in Appendix C. |

| | |
|---|---|
| **Analysis of data** | The background noise data was analysed to determine the following noise descriptor:<br>• $L_{A90,T}$: Background noise level during daytime (7am to 6pm), evening (6pm to 10pm) and night-time (10pm to 7am).<br>The noise survey data at 157 Boonenne Road was analysed to determine the following noise descriptors:<br>• $L_{Aeq,T}$, $L_{A10,T}$, $L_{A1,T}$, $L_{Amax,T}$ and $L_{A90,T}$;<br>• $L_{Aeq,T}$ in 1/3 octave bands to assess tonality; and<br>• $L_{Amax,T}$(Fast) and $L_{Amax,T}$(Impulse) to assess impulsiveness. |

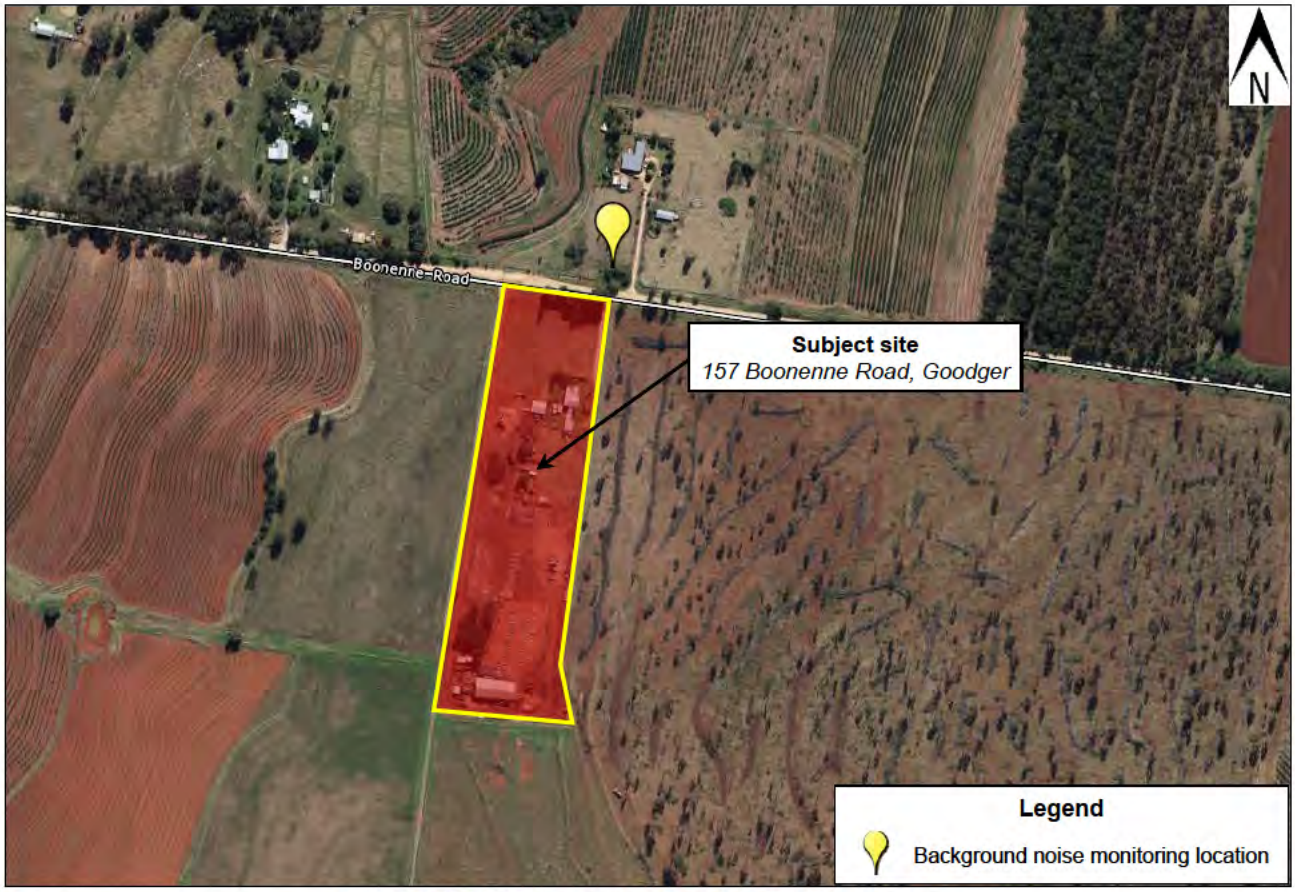



**Figure 2.1 Background noise monitoring location**

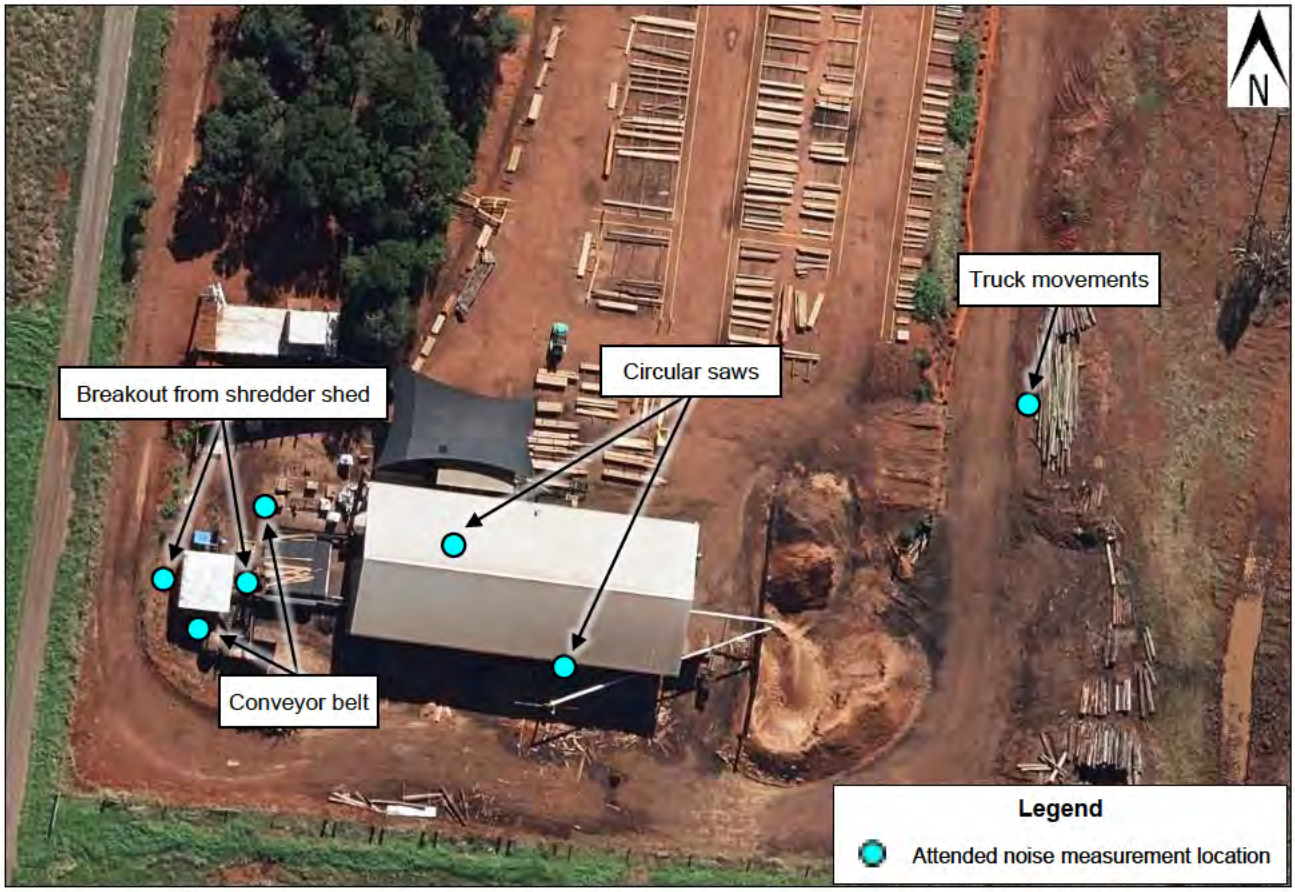



**Figure 2.2 Noise survey locations at existing timber milling and woodchipping facility**

## 2.2 Measurement Results

### 2.2.1 Background noise monitoring

The results of the background noise measurements undertaken from 21 June to 1 July 2023, expressed in terms of the relevant noise descriptors, are presented in Table 2.2 and Appendix D.

**Table 2.2 Measured background noise levels**

| Date | Background noise levels $L_{90}$ dB(A) | | |
|---|---|---|---|
| | $L_{90,11hr,Day}$ (7am–6pm) | $L_{90,4hr,Evening}$ (6pm–10pm) | $L_{90,9hr,Night}$ (10pm–7am) |
| 21 June 2023 (Wed) | — | 26 | 24 |
| 22 June 2023 (Thu) | 35 | 30 | 27 |
| 23 June 2023 (Fri) | 38 | 26 | 22 |
| 24 June 2023 (Sat) | 35 | 22 | 22 |
| 25 June 2023 (Sun) | 35 | 25 | 23 |
| 26 June 2023 (Mon) | 37 | 22 | 23 |
| 27 June 2023 (Tue) | 33 | 25 | 24 |

| Date | Background noise levels $L_{90}$ dB(A) | | |
|---|---|---|---|
| | $L_{90,11hr,Day}$ (7am–6pm) | $L_{90,4hr,Evening}$ (6pm–10pm) | $L_{90,9hr,Night}$ (10pm–7am) |
| 28 June 2023 (Wed) | 36 | 30 | 32 |
| 29 June 2023 (Thu) | 39 | 29 | 26 |
| 30 June 2023 (Fri) | 34 | 23 | 22 |
| 1 July 2023 (Sat) | 29 | 22 | 25 |
| **Arithmetic Average** | **35** | **26** | **25** |

### 2.2.2 Operational Noise Measurements Results – Near Field

Attended noise measurements were carried out at near-field locations to the equipment at the existing timber milling and woodchipping facility at 157 Boonenne Road during the current hours of operation, to determine the sound power levels of the equipment.

The results of the measurement of the operational noise levels from the mechanical equipment and plant, as carried out on 21 June 2023 (Wednesday), are presented in Table 2.4.

**Table 2.3 Attended noise measurements – 21 June 2023**

| Location | Source | Measurement location | Measured Sound Pressure Level (SPL) $L_{eq,adj,T}$ dB(A) | Measured Sound Power Level (SWL) $L_{eq,adj,T}$ dB(A) |
|---|---|---|---|---|
| Covered area | Circular saws | 1m setback | 91.6 | 99.5 |
| Shredder shed Western façade | Shredder | 1m setback | 70.9 | 78.9 |
| Shredder shed Eastern façade | Shredder | 1m setback | 93.2 | 101.1 |
| Covered area | Conveyor belt | 1m setback | 81.7 | 89.6 |
| Internal driveways | Truck movements | 1m setback | 63.3 | 71.3 |

# 3. Noise Criteria

The following documents outline the information to be provided to support a development application and environmental authority application for activities with noise impacts:

- Department of Environment and Science (DES), *Guideline: Environmental Protection Act 1994*, *Application requirements for activities with noise impacts*, 3 February 2020.
- South Burnett Regional Council *Planning Scheme V2.0 (2017).*

## 3.1 Department of Environment and Science Guideline

The DES guideline states the following:

> *When deciding an application, the department is required to assess the application against requirements stipulated in the EP Act, including considerations stated in the EP Regulation and any relevant Environmental Protection Policy, including the EPP (Noise).*
>
> *For environmental authority applications that have noise impacts the application must describe how one of the following environmental objective and performance outcomes for the ERA will be achieved. Under Schedule 8, Part 3, Division 1 of the EP Regulation the environmental objectives and performance outcomes for noise emissions in Queensland are:*
>
> ***Environmental objective***
>
> *The activity will be operated in a way that protects the environmental values of the acoustic environment.*
>
> ***Performance outcome***
>
> *(a) Sound from the activity is not audible at a sensitive receptor, or*
>
> *(b) The release of sound to the environment from the activity is managed so that adverse effects on environmental values including health and wellbeing and sensitive ecosystems are prevented or minimised.*

The DES refers to the relevant Queensland legislation for regulating noise, including the *Environmental Protection (Noise) Policy 2019*.

## 3.2 South Burnett Regional Council Planning Scheme 2017

The relevant extracts from *South Burnett Regional Council Planning Scheme V2.0 (2017) – Rural Zone, Part 6.2.13.3 Criteria for assessment* are presented in Table 3.1.

Table 3.1 Rural Zone – Accepted development subject to requirements and assessable development

| Performance outcome | Acceptable outcome |
|---|---|
| **Noise** | |
| **PO1**<br><br>Development maintains rural amenity and character. | **AO1.2**<br><br>The use does not cause odour, noise or air emissions in excess of the prescribed limits in the *Environmental Protection (Air) Policy 2019* or the *Environmental Protection (Noise) Policy 2019.* |

## 3.3 Environmental Protection (Noise) Policy 2019

### 3.3.1 Acoustic Quality Objectives

The *Environmental Protection (Noise) Policy 2019* identifies environmental values for the acoustic environment and sets acoustic quality objectives for sensitive receptors. The purpose of the acoustic quality objectives is to protect the acoustic amenity of the environment. The criteria from Schedule 1 of the policy are presented in Table 3.2.

Table 3.2 Environmental noise criteria

| Sensitive receptor | Location | Period | Acoustic quality objectives | | | Environmental value |
|---|---|---|---|---|---|---|
| | | | $L_{Aeq,adj,1\text{-}hr}$ | $L_{A10,adj,1\text{-}hr}$ | $L_{A01,adj,1\text{-}hr}$ | |
| Residence | Indoors | Day time and evening | 35 | 40 | 45 | Health and wellbeing |
| | | Night-time | 30 | 35 | 40 | Health and wellbeing, in relation to the ability to sleep |
| | Outdoors | Day time and evening | 50 | 55 | 65 | Health and wellbeing |
| | | Night-time | 37 (30 + 7) | 42 (35 + 7) | 47 (40 + 7) | Health and wellbeing, in relation to the ability to sleep |

The following is noted regarding the acoustic quality objectives:

- Under the *Noise Policy*, daytime is 7am to 6pm, evening is 6pm to 10pm and night-time is 10pm to 7am.
- The *Noise Policy* does not specify outdoor noise criteria for dwellings during night-time. However, the outdoor noise criteria have been derived from the internal criteria, assuming 7dB noise reduction by the building envelope with windows open[1].
- The assessment of compliance with the operational noise criteria is based on the results of the noise propagation modelling for a period of 1-hour with maximum noise emissions.

[1] Typical noise reduction for windows partially open, *Planning for Noise Control Guideline*, Dept. of Environment and Science (DES).

### 3.3.2 Background Creep

Controlling background creep[2] is an important consideration under the *Environmental Protection (Noise) Policy 2019* and the background creep criteria states the following:

*To the extent that it is reasonable to do so, noise from an activity must not be:*

- *For noise that is continuous noise measured by $L_{A90,T}$ – more than nil dB(A) greater than the existing acoustic environment measured by $L_{A90,T}$.*
- *For noise that varies over time measured by $L_{Aeq,adj,T}$ – more than 5dB(A) greater than the existing acoustic environment measured by $L_{A90,T}$.*

It should be noted that the 2019 version of the *Noise Policy* no longer includes the background creep criteria as written above. However, the *Policy* includes the following statement "*To the extent it is reasonable to do so, noise must be dealt with in a way that ensures– background creep in an area or place is prevented or minimised.*" Therefore, it is a requirement that background creep is assessed so ATP has continued to use the background creep criteria as written in the previous 2008 Policy.

The background creep criteria, based on the lowest measured existing background noise levels, presented in Section 2.2 of this report, are presented in Table 3.3.

**Table 3.3 Background creep noise criteria**

| Noise characteristic | Background creep criteria, $L_{Aeq,adj,T}$ | | |
|---|---|---|---|
| | **Day 7:00am to 6:00pm** | **Evening 6:00pm to 10:00pm** | **Night 10:00pm to 7:00am** |
| Continuous noise | **35** (RBL + 0) | **26** (RBL + 0) | **25** (RBL + 0) |
| Time-varying noise | **40** (RBL + 5) | **31** (RBL + 5) | **30** (RBL + 5) |

[2] Background creep is defined as an increase in the background noise levels due to constant addition of new noise sources in the environment. The purpose of the background creep noise criteria is to prevent increase in the background noise level ($L_{90,T}$), which is the main noise amenity descriptor.

# 4. Noise Propagation Modelling

## 4.1 Modelling Methodology

A 3D model of the development and surroundings was developed using SoundPLAN noise propagation software considering the location and sound power levels of the dominant noise sources at the development.

The calculations were carried out as per the procedures specified in the International Standard ISO9613 (*Acoustics – Attenuation of sound during propagation outdoors*).

The calculation method for a single frequency is as follows:

$$L_S = [\ L_W + K_0\ ] - [\ A_{dI} + A_{div} + A_{gr} + A_{bar} + A_{atm} + d_{Lrefl} + d_{Lw}\ ]$$

Where:

| | |
|---|---|
| $L_S$ | Sound pressure for a single frequency |
| $L_W$ | Sound power of source |
| $K_0$ | Correction for propagation in limited spacial angle |
| $A_{DI}$ | Mean directivity correction |
| $A_{div}$ | Mean attenuation due to geometrical spreading |
| $A_{gr}$ | Mean attenuation due to ground effect |
| $A_{bar}$ | Mean attenuation due to screening |
| $A_{atm}$ | Mean attenuation due to air absorption |
| $d_{Lrefl}$ | Level increase due to reflections |
| $d_{Lw}$ | Correction due to source operation time |

The noise propagation losses are calculated as a combination of distance attenuation (geometrical spreading), screening, ground attenuation and other factors.

The results of noise modelling as per ISO9613 are in terms of $L_{eq}$. A conversion factor was applied to $L_{eq}$ to obtain results in terms of the other assessment criteria $L_{10}$ and $L_{01}$. The conversion factors are presented in Table 4.1.

**Table 4.1 Noise descriptor conversion factors**

| Type of noise | Conversion factors | |
|---|---|---|
| | $L_{eq}$ to $L_{10}$ | $L_{eq}$ to $L_{01}$ |
| Non-continuous noise | $L_{10} = L_{eq} + 3$ dB | $L_{01} = L_{eq} + 8$ dB |
| Continuous noise | $L_{10} = L_{eq}$ | $L_{01} = L_{eq}$ |

The assumptions and data used in development of the operational noise propagation model are presented in Table 4.2.

Table 4.2 Data and assumptions – Operational noise model

| | |
|---|---|
| **Terrain** | • Department of Natural Resources and Mines Airborne Laser Scanning (LiDAR) 1 metre data was used to determine the elevation of the development relative to the surrounds.<br>• The finished surface levels of the development were provided by Boonenne Timbers.<br>• Ground surface absorption factor of 0 was applied to all paved surfaces and 1 for all grassed areas. |
| **Buildings** | • The existing buildings at the subject site were included in the model along with neighbouring buildings. The development layout is presented in Appendix A. |
| **Noise sources and operating times** | • Refer to Section 4.2. |
| **Receptors** | • Receptors were attached to the façades of the noise sensitive buildings at a height of 1.5m above finished floor level.<br>• SoundPLAN adds +2.5dB(A) to the calculated noise levels when the receptors are attached to the buildings, thus the noise levels are façade adjusted. |
| **Noise control measures** | • Refer to Section 5 of this report for recommended noise control measures. |
| **Distance attenuation** | • 3D model of the subject site and surroundings was developed using cadastral and survey data using SoundPLAN software. The source-receiver distances and geometrical spreading are automatically calculated in SoundPLAN to a high level of accuracy in accordance with the ISO9613 procedure.<br>• Separation distances and distance attenuation values are presented in Appendix E. |
| **Barrier attenuation / screening** | • Screening by walls and roofs was considered in the model. The screening was calculated in SoundPLAN in accordance with the ISO9613 procedure.<br>• Barrier attenuation / screening values are presented in Appendix E. |
| **Ground attenuation** | • Sound reflecting surfaces such as pavement are modelled with ground absorption coefficient of 0 (no absorption). Grassed and vegetated areas were modelled with ground absorption coefficient of 1 (100% absorption) in accordance with ISO9613.<br>• Ground attenuation values are presented in Appendix E. |

## 4.2 Noise Sources

Details of the major noise sources at the development with a potential to impact on the nearest noise sensitive places are presented in Table 4.3.

The noise sources used in Table 4.3 have been sourced from SoundPLAN emission library and noise measurements carried out at similar type of developments.

**Table 4.3 Noise sources**

| Operational Noise Source | Location (refer Figures 4.1 and 4.2) | Sound Power Level dB(A) (re $10^{-12}$W) | Operational Scenario | Tonality/ Impulsiveness |
|---|---|---|---|---|
| Chainsaw | Log yard | 114 dB(A) – Point Source<br><br>Derived from chainsaw manufacturer specifications – Stihl MS660 | 60min per day from 7:00am to 3:00pm | +5 dB for tonality |
| Combined noise from conveyor belts and timber processing tools | Covered area | 88 dB(A) – Area source<br><br>Derived from noise measurements at the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger. | Continuous operation 6:00am to 3:00pm | +5 dB for tonality |
| Circular saws | Covered area | 99 dB(A) – Point source<br><br>Derived from noise measurements at the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger. | 6min per hour from 6:00am to 3:00pm | +5 dB for tonality |
| Shredder | Eastern façade of the shredder shed | 100 dB(A) – Point source<br><br>Derived from noise measurements at the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger. | Continuous operation 6:00am to 3:00pm | +5 dB for tonality |
| Breakout noise – shredder shed | Shredder shed | 79 dB(A) sound power level per unit, radiated from the external walls and roof of the shredder shed.<br><br>Derived from noise measurements at the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger. | Continuous operation 6:00am to 3:00pm | +5 dB for tonality |
| Breakout noise – Flexishield | Eastern façade of the shredder shed | 83 dB(A) sound power level per unit, radiated from the northern and southern external Flexishield walls on the Eastern façade of the shredder shed.<br><br>Derived from noise measurements at the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger. | Continuous operation 6:00am to 3:00pm | +5 dB for tonality |

| Operational Noise Source | Location (refer Figures 4.1 and 4.2) | Sound Power Level dB(A) (re $10^{-12}$W) | Operational Scenario | Tonality/ Impulsiveness |
|---|---|---|---|---|
| Delivery truck movements | Internal driveways | 101 dB(A) point source, moving at 20 km/h, equating to a line source with 58 dB(A) per metre[3].<br><br>ATP Library: Truck Slowly Accelerating 10-20km/h | • 6 movements per hour between 6:00am to 3:00pm<br><br>• 1 movement per hour between 3:00pm to 6:00pm | +5 dB for tonality |
| Forklift and trucks loading | Sawn timber storage and dispatch | 92 dB(A) – Area source<br><br>SoundPLAN Library: Truck loading low lift | Continuous operation 6:00am to 3:00pm | +5 dB for tonality |
| Staff and visitor carpark | Office area | SoundPLAN calculates[4] noise emissions from parking areas based on the number of parking bays, surface type, and the type of parking lot, and considers the impact noise of a car door closing – 'slam'.<br><br>The data input for the car parks is as follows:<br>• No. Parking Bays: 15<br>• Surface Type: Gravel<br>• Parking Lot Type: Staff and visitors | • 15 movements per hour between 6:00am to 3:00pm<br><br>• 8 movements per hour between 3:00pm to 6:00pm | +5 dB for impulsiveness |

Excerpt from the SoundPLAN 3D noise propagation model is presented in Figures 4.1 and 4.2.

[3] Modelled as a line source, with the sound power per metre calculated using the "moving point source definition" in SoundPLAN (point source with sound power of 100.7 dB(A) moving at 20 km/h).
[4] SoundPLAN uses the methodology of the Bavarian parking lot study (2007) to calculate car park noise emissions. (Bavarian State Agency for the Environment 2007, *Parking Area Noise*, 6th Edition, Bavarian State Ministry for the Environment, Germany).

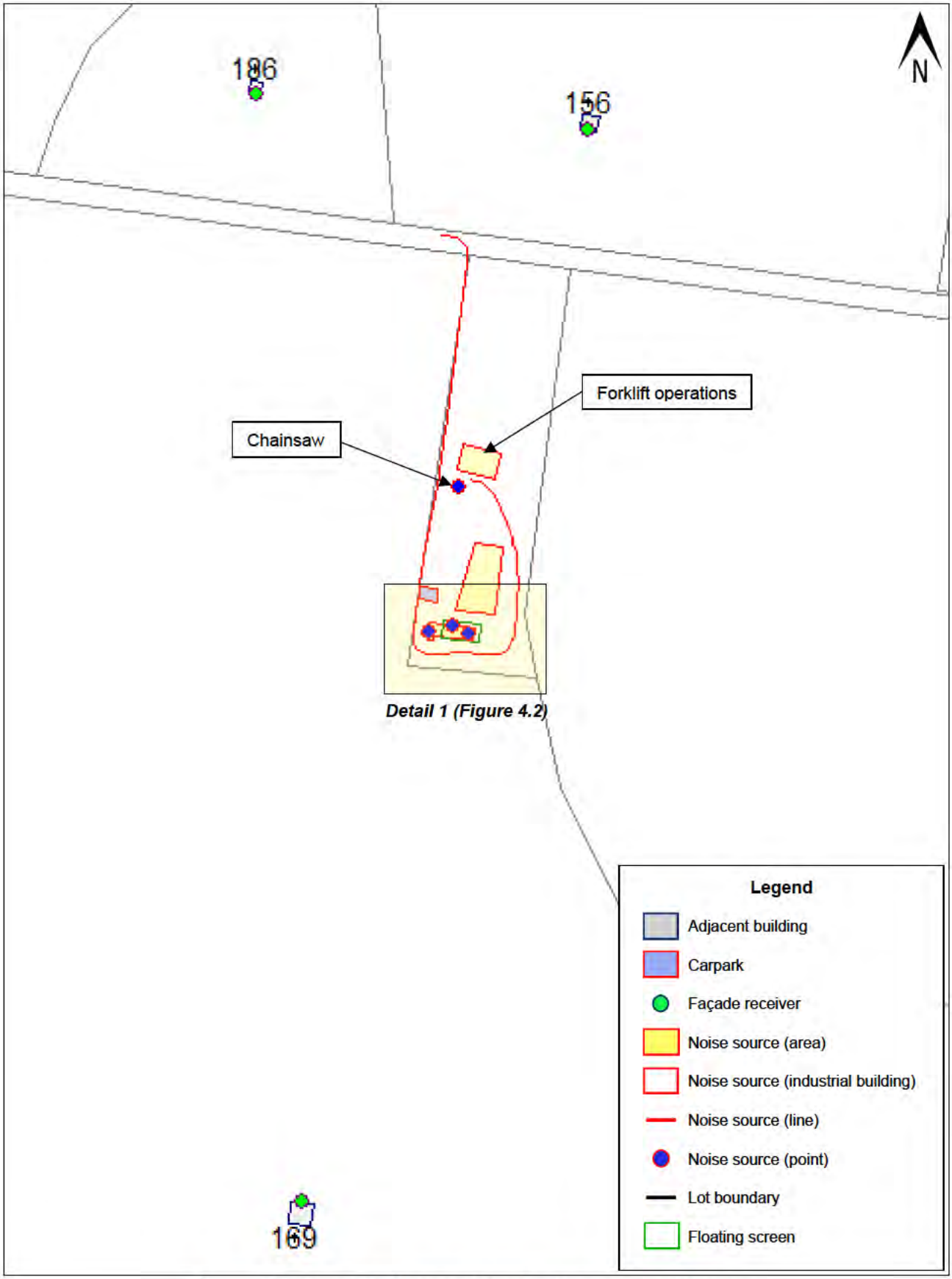



**Figure 4.1 SoundPLAN operational noise model – Overview**

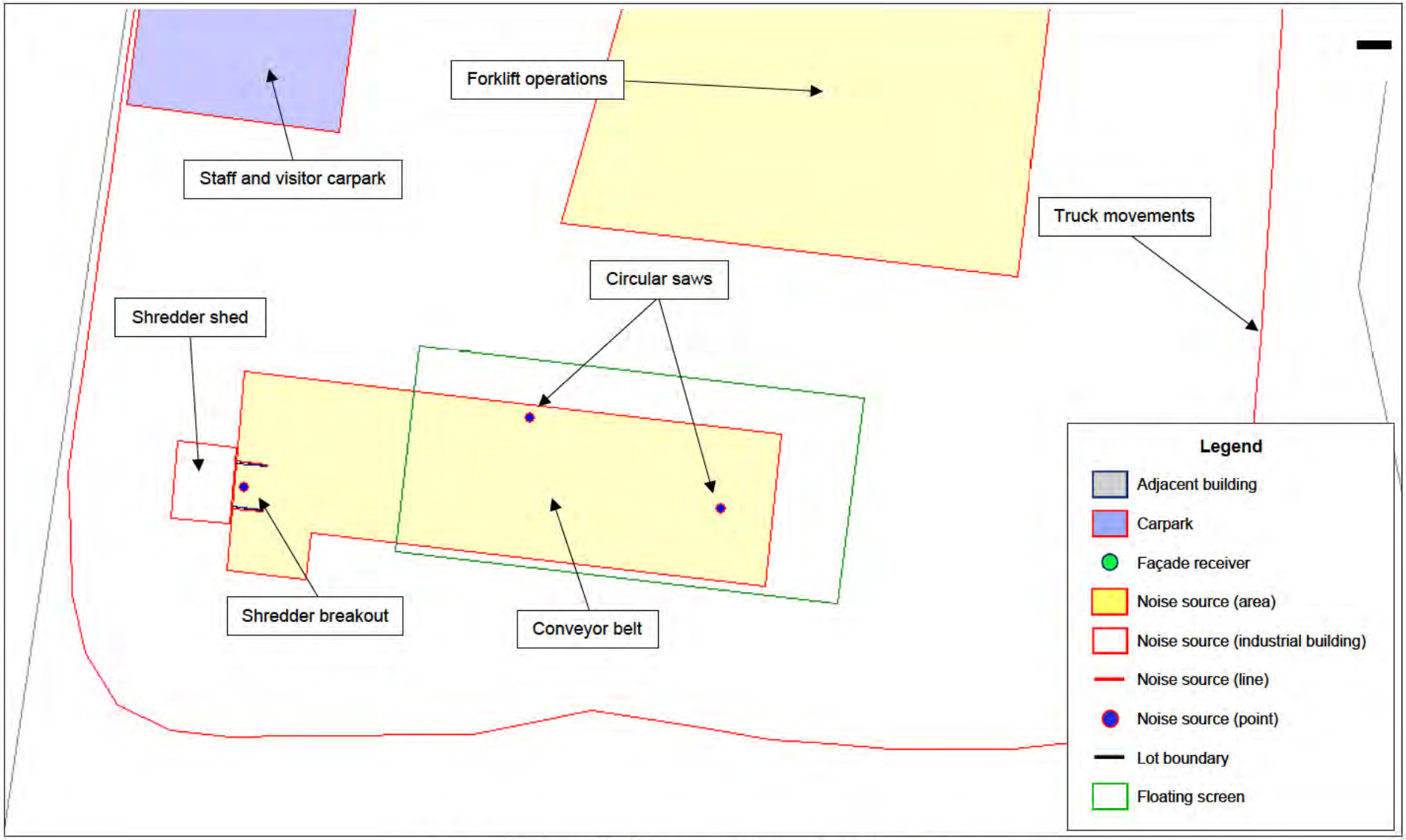



**Figure 4.2 SoundPLAN operational noise model – Detail 1**

## 4.3 Operational Noise Calculation Results

### 4.3.1 Acoustic Quality Objectives

Summary of the highest calculated noise levels for time interval T = 1hr at the nearest noise sensitive places, relative to the acoustic quality objectives, are presented in Table 4.4.

Table 4.4 Operational noise levels – Acoustic quality objectives

| Location | Calculated noise levels | | | | | | | | | Complies with noise criteria? |
|---|---|---|---|---|---|---|---|---|---|---|
| | $L_{eq,adj,1hr}$ day dB(A) | $L_{eq,adj,1hr}$ evening dB(A) | $L_{eq,adj,1hr}$ night dB(A) | $L_{10,adj,1hr}$ day dB(A) | $L_{10,adj,1hr}$ evening dB(A) | $L_{10,adj,1hr}$ night dB(A) | $L_{01,adj,1hr}$ day dB(A) | $L_{01,adj,1hr}$ evening dB(A) | $L_{01,adj,1hr}$ night dB(A) | |
| *EP Noise 2019 acoustic quality objectives (external criteria) for residences:* | 50 | 50 | 37 | 55 | 55 | 42 | 65 | 65 | 47 | |
| No. 156 Boonenne Road | 44 | — | 38 | 47 | — | 41 | 52 | — | 46 | Yes |
| No. 169 Boonenne Road | 39 | — | 36 | 42 | — | 39 | 47 | — | 44 | Yes |
| No. 186 Boonenne Road | 42 | — | 35 | 45 | — | 38 | 50 | — | 43 | Yes |

### 4.3.2 Background Creep

Summary of the highest calculated noise levels for the time interval T = 11hr, 4hr and 9hr at the nearest noise sensitive places, relative to the background creep criteria, are presented in Table 4.5.

**Table 4.5 Operational noise levels – Background creep**

| Location | Calculated noise levels | | | Complies with noise criteria? |
|---|---|---|---|---|
| | $L_{eq,adj,11hr}$ Day dB(A) | $L_{eq,adj,4hr}$ Evening dB(A) | $L_{eq,adj,9hr}$ Night dB(A) | |
| *EP Noise Policy 2008* background creep (external criteria): | | | | |
| Continuous noise | 35 | 26 | 25 | |
| Variable noise | 40 | 31 | 30 | |
| No. 156 Boonenne Road | 40 | — | 28 | Yes |
| No. 169 Boonenne Road | 36 | — | 27 | Yes |
| No. 186 Boonenne Road | 38 | — | 26 | Yes |

SoundPLAN tabulated noise levels (cumulative noise impacts) are presented in Appendix E.

Separate acoustic impacts of the individual noise sources considered in the SoundPLAN model, and the noise propagation modelling factors as per International Standard ISO9613 (*Acoustics – Attenuation of sound during propagation outdoors*) calculation method are also presented in Appendix E.

Noise propagation modelling contour maps are presented in Appendix F.

# 5. Discussion and Recommendations

Detailed noise propagation modelling was carried out considering all potential noise emissions from the operation of the proposed timber milling and woodchipping facility at 157 Boonenne Road in Goodger to determine the potential noise impact on the nearest noise sensitive places.

The noise sources and operational scenarios included in this report have been considered based on the scale and intensity of the operations at the existing timber milling and woodchipping facility, as no changes are expected to the noise sources at 157 Boonenne Road in Goodger. The dominant noise sources are located at the covered work area, and these include noise from the circular saw and shredder. Other noise sources include delivery and dispatch of materials (truck movements), forklifts and staff and visitor parking.

The relevant noise criteria from the *Environmental Protection (Noise) Policy 2019* and the relevant general development provisions in accordance with the *South Burnett Regional Council Planning Scheme* were considered in this assessment.

The nearest noise sensitive residential receptors to the site are the low-set dwellings along Boonenne Road. However, it is to be noted that the dwellings are mostly used in association with rural activities or for commercial operations, rather than as dwellings.

The results of the conservative noise propagation modelling indicate that there will be no noise impacts on the nearest noise sensitive land uses, mainly because the most dominant noise sources are located at the covered area, which is at the back of the development, approximately 330 metres from Boonenne Road and approximately 450 metres from the nearest noise sensitive use at 156 Boonenne Road.

## 5.1 Noise Mitigation Measures

To ensure ongoing compliance with the noise criteria at the nearest noise sensitive receptors, the following mitigation measures are recommended:

- Acoustic screen in a form of industrial PVC – Strip curtains such as *Flexishield* or similar are required for the openings (end of the conveyor belt course) on the eastern façade of the shredder shed to prevent noise impact on the nearest noise sensitive places. The alignment of the acoustic screen is presented in Figure 5.1.


Figure 5.1 Alignment of acoustic screen (shredder shed)

- The acoustic screens (curtains) should be minimum 4mm thick and with 100 to 120mm overlaps. The weighted sound reduction index should be minimum $R_w$ 18. Examples of the acoustic screens (curtains) are presented in Appendix G.
- The chainsaws should not be used during night time (6:00am to 7:00am).
- Maintenance of the blades of the circular saws should be done regularly to maintain good cutting conditions and reduce noise generated by damaged equipment.
- Mobile plant to be fitted with broadband reversing beepers. All reversing beepers should meet the relevant occupational safety requirements. This should be implemented for plant operating during night-time hours where reasonable and practicable.
- Use mufflers and engine covers/screens where appropriate for generators and mobile plant.
- Care should be taken to reduce noise when loading or unloading vehicles or moving materials. Minimise drop height of materials when transferring (e.g loading and unloading vehicles and storage areas).

Provided the recommendations of this report are fully implemented, there are no further acoustic constraints on the increase of the hours of operation of the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger.

# 6. References


- Australian Standard *AS 1055:2018 (Acoustics – Description and Measurement of Environmental Noise)*
- Australian Standard *AS/NZS IEC 61672.1-2019* (*Electroacoustics – Sound level meters – Specifications*)
- South Burnett Regional Council, *Planning Scheme Version 2.0*, 2017
- Department of Environment and Science (DES), *Guideline: Environmental Protection Act 1994, Application requirements for activities with noise impacts*, 3 February 2020.
- Department of Environment and Science (DES), *Noise Measurement Manual v. 4.1*, 10 March 2020
- International Standard ISO 9613 (*Acoustics – Attenuation of sound during propagation outdoors*)
- Queensland Government, *Environmental Protection Act 1994*
- Queensland Government, *Environmental Protection (Noise) Policy 2019*
- Queensland Government, *Environmental Protection Regulation 2019*

# 7. Appendices

Appendix A – Site Layout

Appendix B – Site Photos

Appendix C – Meteorological Data

Appendix D – Background Noise Measurement Results

Appendix E – Operational Noise Level

Appendix F – Noise Contour Maps

Appendix G – Acoustic Screening (Curtains)

# Appendix A – Site Layout


Diagram 4: Site infrastructure identified (base figure Qld Globe, November 2022).

A Residence

B Shed (not associated with Residence)

C Sawdust stockpile

D Shredded log yard waste

E Firewood stockpile

F Equipment laydown areas

G Sawn timber load-out area

H Log yard

I Mobile machinery parking area

J Water tank, toilet and bunded diesel AST

K Sawdust from Sawmill

L Sawmill (includes workshop, sawroom & chainsaw shed

M Chipper

N Office

O Transformer

P Sawn timber storage

Q Entry/exit to sawmill

R Entry/exit to residence

S Sediment basin

# Appendix B – Site Photos

**Photo 1: Background noise monitoring location – view due north**

**Photo 2: Noise measurement (Front-end loader) – view due west**

# Appendix C – Meteorological Data

# Kingaroy, Queensland
# June 2023 Daily Weather Observations

Australian Government
Bureau of Meteorology

| Date | Day | Temps | | Rain | Evap | Sun | Max wind gust | | | 9am | | | | | | 3pm | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Min | Max | | | | Dirn | Spd | Time | Temp | RH | Cld | Dirn | Spd | MSLP | Temp | RH | Cld | Dirn | Spd | MSLP |
| | | °C | °C | mm | mm | hours | | km/h | local | °C | % | eighths | | km/h | hPa | °C | % | eighths | | km/h | hPa |
| 1 | Th | 1.9 | 23.7 | 0 | | | NW | 24 | 10:25 | 14.1 | 67 | | | Calm | 1023.0 | 23.1 | 30 | | SW | 9 | 1019.3 |
| 2 | Fr | 3.2 | 24.2 | 0 | | | E | 20 | 10:15 | 14.5 | 65 | | | Calm | 1024.4 | 23.6 | 37 | | E | 11 | 1021.7 |
| 3 | Sa | 10.4 | 22.2 | 0 | | | ESE | 24 | 10:53 | 15.8 | 96 | | SSE | 13 | 1026.9 | 21.4 | 51 | | ENE | 9 | 1023.8 |
| 4 | Su | 12.4 | 19.1 | 0.8 | | | ESE | 33 | 18:35 | 16.3 | 100 | | ESE | 9 | 1027.4 | 18.7 | 90 | | ESE | 15 | 1024.5 |
| 5 | Mo | 13.5 | 17.9 | 1.8 | | | SE | 39 | 14:47 | 15.5 | 99 | | ESE | 17 | 1027.4 | 14.8 | 99 | | ESE | 19 | 1024.6 |
| 6 | Tu | 12.0 | 20.8 | 0.2 | | | ESE | 39 | 09:06 | 15.1 | 85 | | ESE | 17 | 1027.9 | 19.3 | 56 | | ESE | 15 | 1024.4 |
| 7 | We | 7.2 | 21.2 | 0 | | | E | 39 | 11:03 | 14.4 | 94 | | ESE | 11 | 1027.1 | 19.3 | 51 | | E | 13 | 1023.0 |
| 8 | Th | 6.0 | 22.4 | 0.4 | | | | | | 14.5 | 100 | | SSE | 4 | 1023.2 | 20.8 | 54 | | NNW | 11 | 1017.9 |
| 9 | Fr | 8.9 | | | | | | | | 12.3 | 100 | | | Calm | 1019.6 | 20.3 | 38 | | WSW | 13 | 1018.0 |
| 10 | Sa | -1.0 | 21.2 | | | | E | 22 | 11:03 | 13.0 | 61 | | S | 13 | 1023.5 | 20.7 | 31 | | ENE | 7 | 1020.2 |
| 11 | Su | 3.2 | 21.5 | 0 | | | E | 30 | 10:28 | 15.0 | 85 | | ESE | 13 | 1025.0 | 20.3 | 49 | | SE | 15 | 1021.1 |
| 12 | Mo | 5.4 | 21.5 | 0 | | | SSE | 30 | 14:16 | 13.2 | 100 | | S | 11 | 1023.7 | 19.0 | 60 | | ESE | 15 | 1019.4 |
| 13 | Tu | 11.1 | 24.3 | 0 | | | WNW | 41 | 11:46 | 12.6 | 100 | | S | 6 | 1020.2 | 22.9 | 38 | | SW | 19 | 1015.3 |
| 14 | We | 2.6 | 22.7 | 0 | | | W | 46 | 11:34 | 13.4 | 70 | | | Calm | 1018.6 | 21.5 | 25 | | WSW | 19 | 1016.0 |
| 15 | Th | -2.3 | 20.7 | 0 | | | SSE | 35 | 08:40 | 12.1 | 52 | | SSE | 20 | 1019.6 | 19.9 | 25 | | WSW | 15 | 1015.6 |
| 16 | Fr | -2.4 | 19.6 | 0 | | | S | 30 | 09:37 | 10.3 | 68 | | WNW | 7 | 1021.9 | 19.5 | 21 | | SSW | 15 | 1018.5 |
| 17 | Sa | -1.5 | 21.0 | 0 | | | ESE | 20 | 10:14 | 12.0 | 73 | | | Calm | 1023.2 | 20.1 | 31 | | NNW | 13 | 1018.9 |
| 18 | Su | 1.9 | 23.1 | 0 | | | SW | 31 | 22:17 | 10.5 | 94 | | | Calm | 1020.9 | 22.4 | 31 | | W | 13 | 1015.9 |
| 19 | Mo | 0.5 | 22.0 | 0 | | | WSW | 35 | 13:44 | 12.6 | 57 | | SSW | 7 | 1020.0 | 20.8 | 26 | | WSW | 19 | 1016.3 |
| 20 | Tu | -2.3 | 19.2 | 0 | | | SSW | 41 | 08:29 | 12.2 | 43 | | S | 24 | 1021.1 | 18.5 | 26 | | SSW | 17 | 1018.3 |
| 21 | We | -0.7 | 20.6 | 0 | | | E | 26 | 09:52 | 13.4 | 54 | | | Calm | 1023.3 | 20.2 | 30 | | N | 7 | 1019.6 |
| 22 | Th | 4.6 | 21.9 | 0 | | | NNW | 31 | 11:29 | 14.3 | 68 | | E | 7 | 1021.5 | 20.7 | 40 | | N | 13 | 1016.6 |
| 23 | Fr | 9.2 | 23.8 | 0 | | | WNW | 43 | 11:43 | 16.6 | 83 | | NNW | 20 | 1017.1 | 23.0 | 45 | | W | 22 | 1014.4 |
| 24 | Sa | 0.9 | 24.7 | 0 | | | W | 37 | 13:34 | 10.8 | 75 | | | Calm | 1019.3 | 24.0 | 23 | | W | 15 | 1015.7 |
| 25 | Su | 1.9 | 27.7 | 0 | | | WSW | 46 | 13:48 | 13.6 | 53 | | | Calm | 1020.1 | 26.4 | 24 | | WSW | 28 | 1016.3 |
| 26 | Mo | 6.6 | 24.4 | 0 | | | WSW | 35 | 13:26 | 17.3 | 44 | | | Calm | 1020.6 | 22.7 | 23 | | SW | 19 | 1018.0 |
| 27 | Tu | 2.8 | 24.0 | 0 | | | S | 35 | 09:42 | 15.6 | 27 | | S | 20 | 1022.1 | 23.7 | 11 | | SSE | 7 | 1019.0 |
| 28 | We | 6.4 | 26.9 | 0 | | | SW | 39 | 22:12 | 15.3 | 54 | | NW | 9 | 1020.9 | 25.5 | 31 | | NW | 20 | 1014.8 |
| 29 | Th | 12.8 | 17.3 | 0 | | | SW | 46 | 05:13 | 13.7 | 76 | | SW | 17 | 1017.4 | 15.1 | 56 | | WSW | 20 | 1017.0 |
| 30 | Fr | -0.1 | 18.1 | 0 | | | SSW | 31 | 00:01 | 8.4 | 60 | | WNW | 6 | 1022.4 | 16.8 | 25 | | SSW | 19 | 1018.9 |
| **Statistics for June 2023** | | | | | | | | | | | | | | | | | | | | | |
| | Mean | 4.5 | 22.0 | | | | | | | 13.6 | 73 | | | 8 | 1022.3 | 20.8 | 39 | | | 15 | 1018.8 |
| | Lowest | -2.4 | 17.3 | | | | | | | 8.4 | 27 | | | Calm | 1017.1 | 14.8 | 11 | | # | 7 | 1014.4 |
| | Highest | 13.5 | 27.7 | 1.8 | | | # | 46 | | 17.3 | 100 | | S | 24 | 1027.9 | 26.4 | 99 | | WSW | 28 | 1024.6 |
| | Total | | | 3.2 | | | | | | | | | | | | | | | | | |

Observations were drawn from Kingaroy Airport {station 040922}

IDCJDW4069.202306 Prepared at 13:01 UTC on 2 Jul 2023

# Appendix D – Background Noise Measurement Results

## Unattended Noise Measurements
## Boonenne Timbers

Environmental Noise Levels Day, Evening and Night

**Logger Location - Southern boundary of Lot 3 on RP15595**

| | |
|---|---|
| ARL Environmental Noise Logger | |
| Logger Serial Number | 8780D2 |
| Measurement Title | 20230621_130816 |
| Measurement started at | 21/06 13:15 |
| Measurement stopped at | 02/07 12:45 |
| Frequency Weighting | A |
| Time Averaging | Fast |
| Statistical Interval | 15 min |
| Pre-measurement Ref. | 94.0 |
| Post-measurement Ref. | 93.9 |
| Engineering Units | dB SPL |

| | | $L_{Aeq,T}$ dB(A) | | | $L_{A01,T}$ dB(A) | | | $L_{A10,T}$ dB(A) | | | $L_{A90,T}$ dB(A) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Date** | **Day** | **D** | **E** | **N** | **D** | **E** | **N** | **D** | **E** | **N** | **D** | **E** | **N** |
| 21/06/2023 | Wednesday | — | 32 | 30 | — | 41 | 38 | — | 35 | 32 | — | 26 | 24 |
| 22/06/2023 | Thursday | 48 | 35 | 33 | 60 | 43 | 42 | 48 | 38 | 35 | 35 | 30 | 27 |
| 23/06/2023 | Friday | 47 | 33 | 27 | 57 | 40 | 36 | 48 | 35 | 29 | 38 | 26 | 22 |
| 24/06/2023 | Saturday | 45 | 28 | 29 | 56 | 36 | 38 | 46 | 30 | 30 | 35 | 22 | 22 |
| 25/06/2023 | Sunday | 45 | 30 | 28 | 55 | 37 | 36 | 47 | 32 | 29 | 35 | 25 | 23 |
| 26/06/2023 | Monday | 46 | 28 | 28 | 58 | 36 | 35 | 47 | 31 | 28 | 37 | 22 | 23 |
| 27/06/2023 | Tuesday | 43 | 36 | 31 | 55 | 46 | 40 | 42 | 35 | 33 | 33 | 25 | 24 |
| 28/06/2023 | Wednesday | 44 | 36 | 38 | 55 | 43 | 45 | 45 | 38 | 40 | 36 | 30 | 32 |
| 29/06/2023 | Thursday | 47 | 35 | 32 | 57 | 43 | 38 | 47 | 37 | 33 | 39 | 29 | 26 |
| 30/06/2023 | Friday | 45 | 30 | 27 | 57 | 38 | 35 | 45 | 31 | 29 | 34 | 23 | 22 |
| 1/07/2023 | Saturday | 44 | 28 | 31 | 57 | 35 | 38 | 43 | 30 | 33 | 29 | 22 | 25 |
| **Average** | | **45** | **32** | **30** | **57** | **40** | **38** | **46** | **34** | **32** | **35** | **26** | **25** |

***Note***

— No noise data available

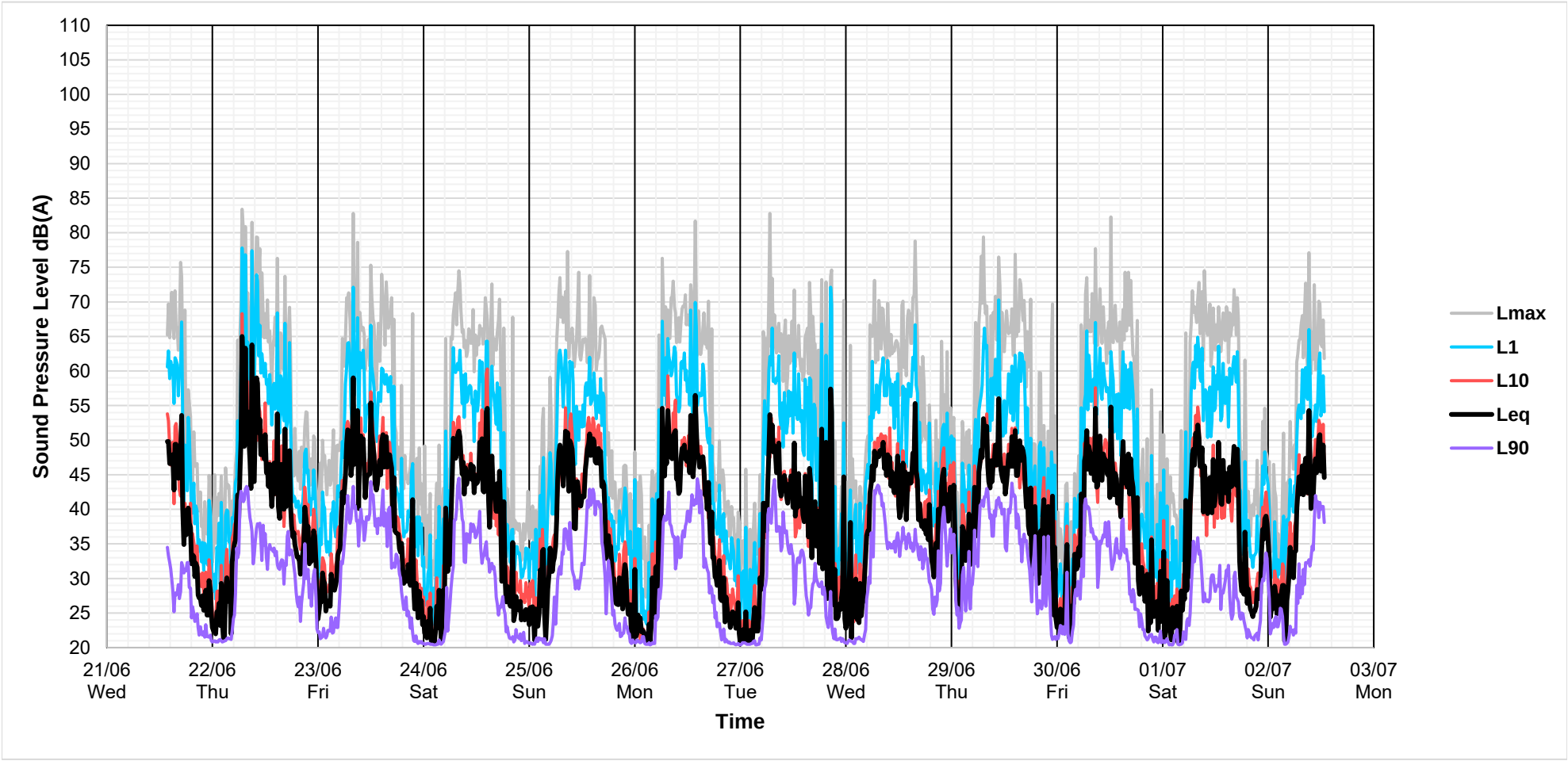
Day (D): 7:00am to 6:00pm

Evening (E): 6:00pm to 10:00pm

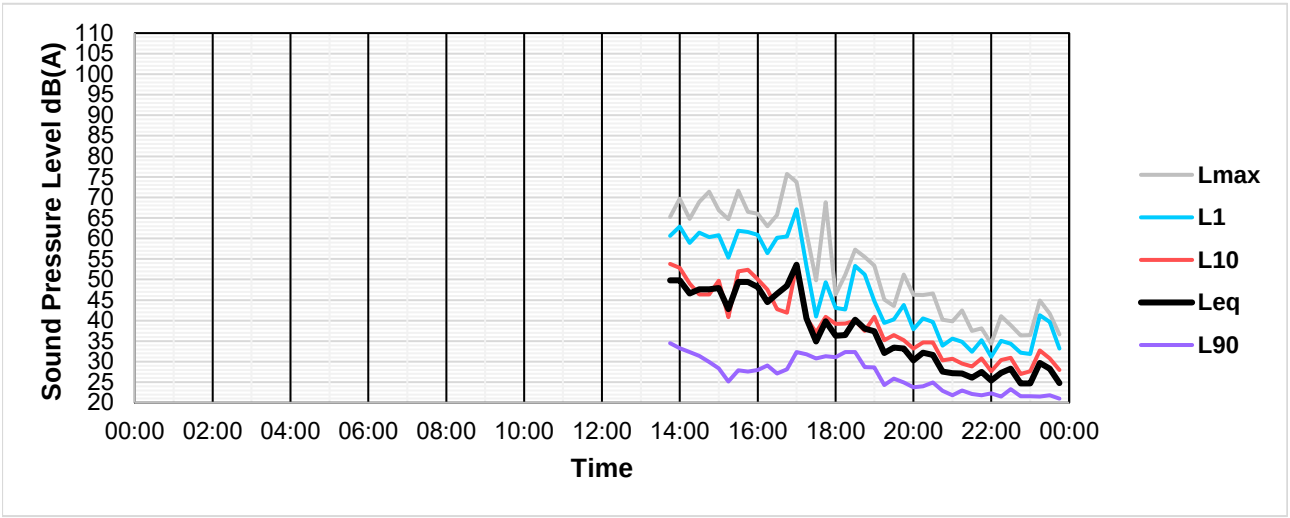
Night (N): 10:00pm to 7:00am

Rainfall recorded on this day

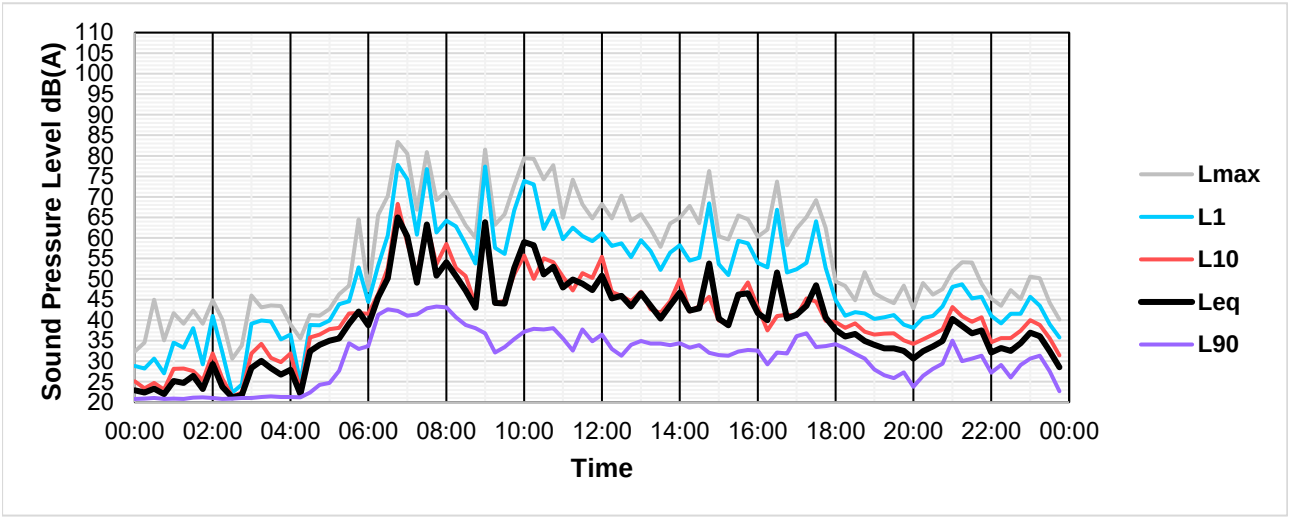
## Unattended Noise Measurements
## 21 June to 2 July 2023



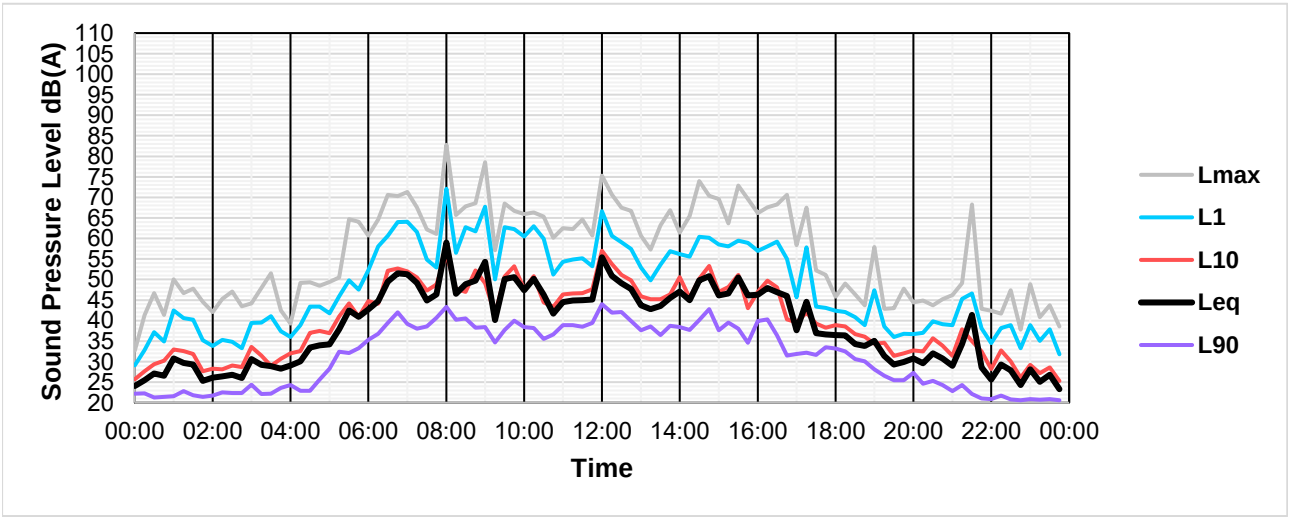
## Unattended Noise Measurements
## Wednesday 21 June 2023



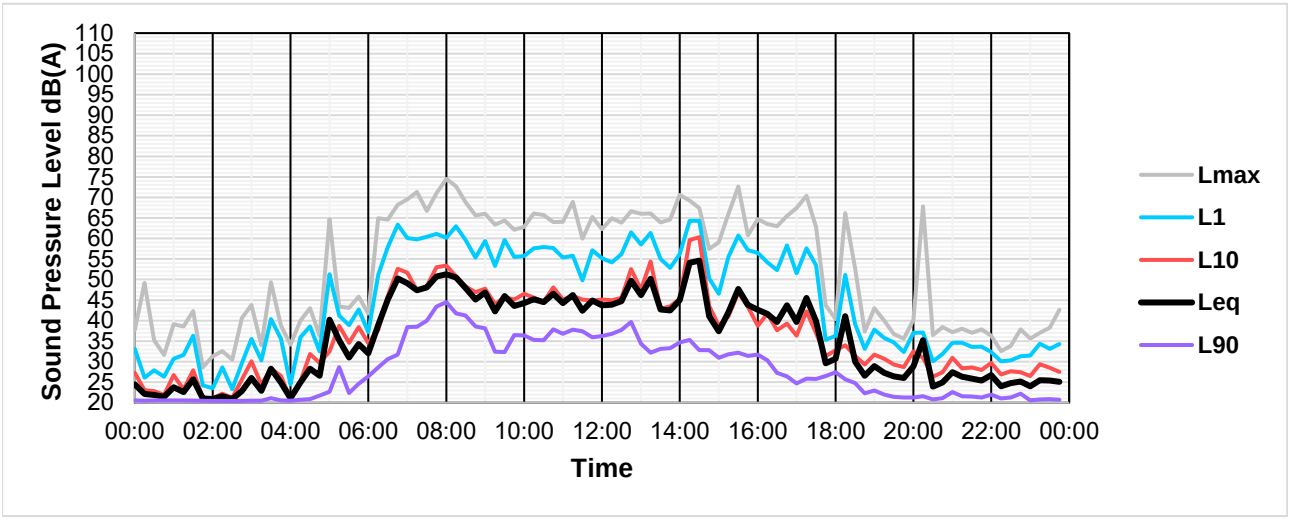

## Unattended Noise Measurements
## Thursday 22 June 2023



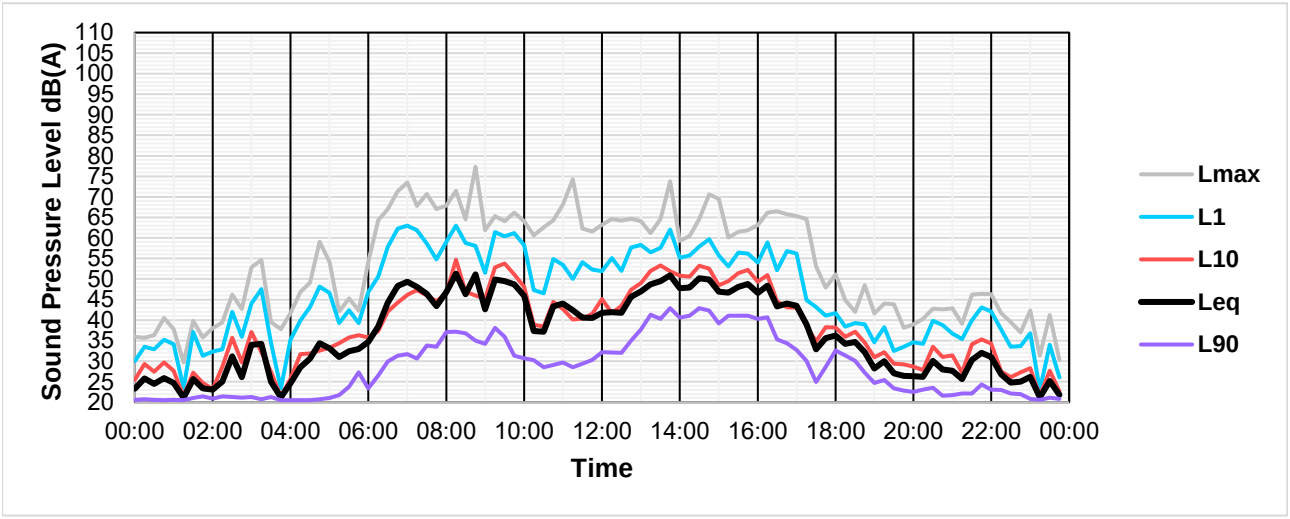

## Unattended Noise Measurements
## Friday 23 June 2023



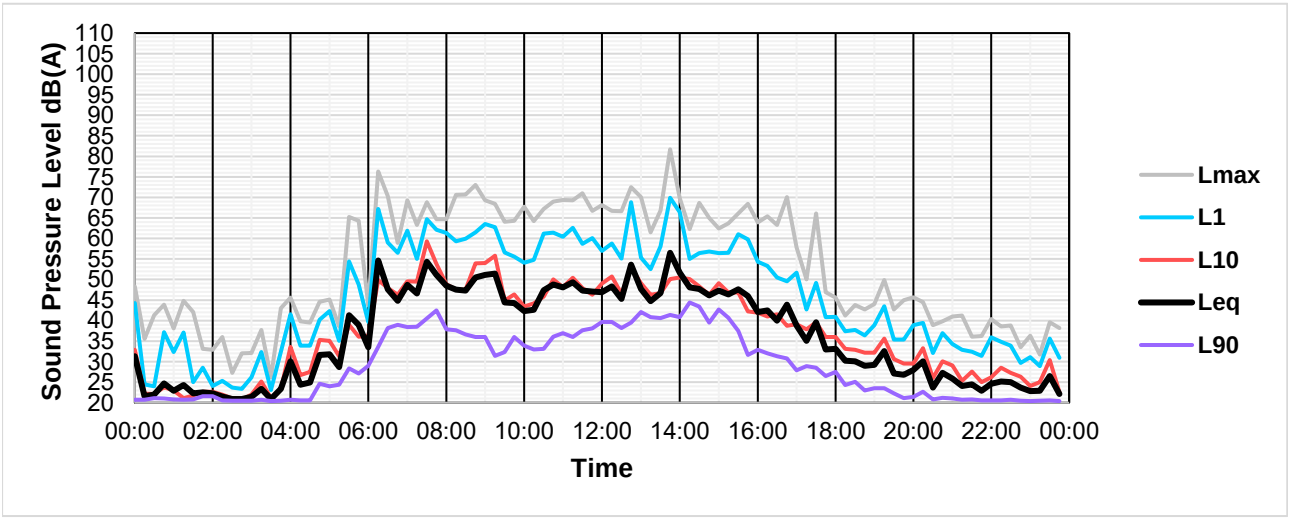
## Unattended Noise Measurements
## Saturday 24 June 2023



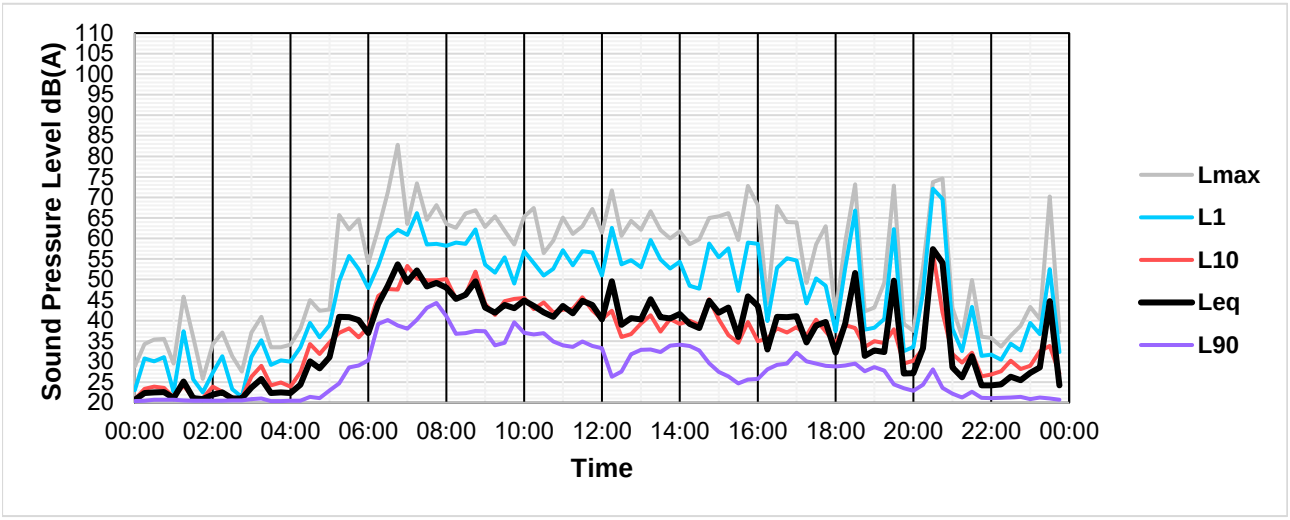

## Unattended Noise Measurements
## Sunday 25 June 2023



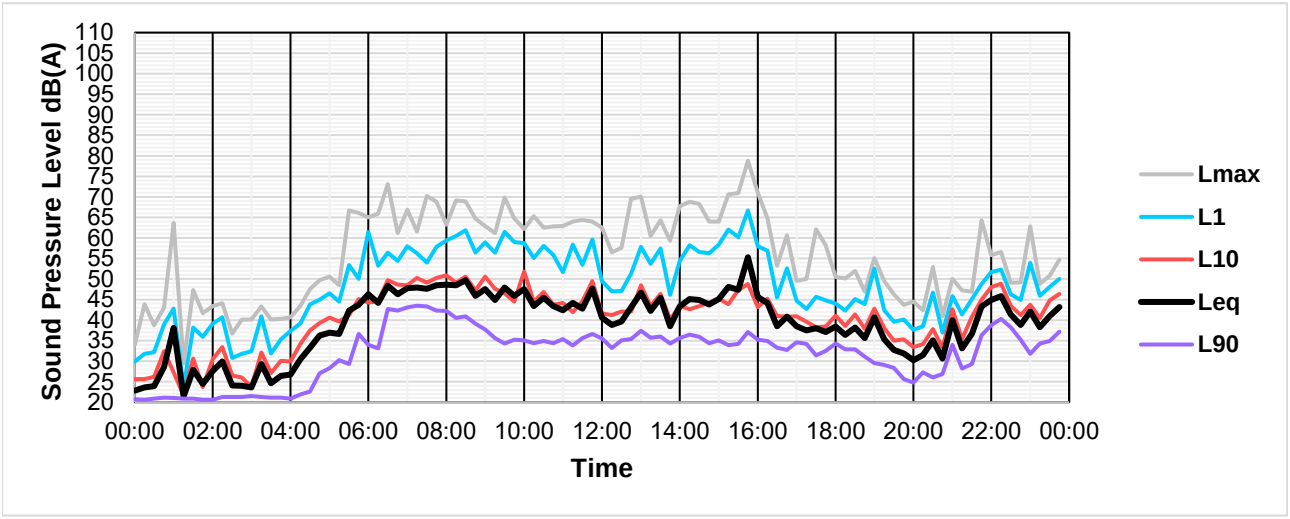

## Unattended Noise Measurements
## Monday 26 June 2023



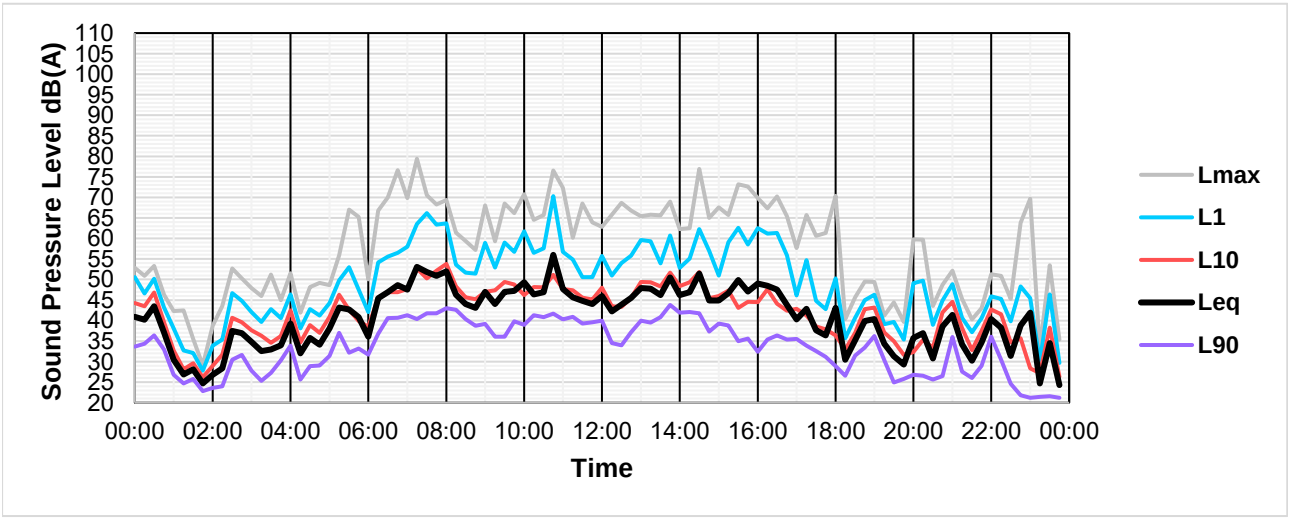
## Unattended Noise Measurements
## Tuesday 27 June 2023



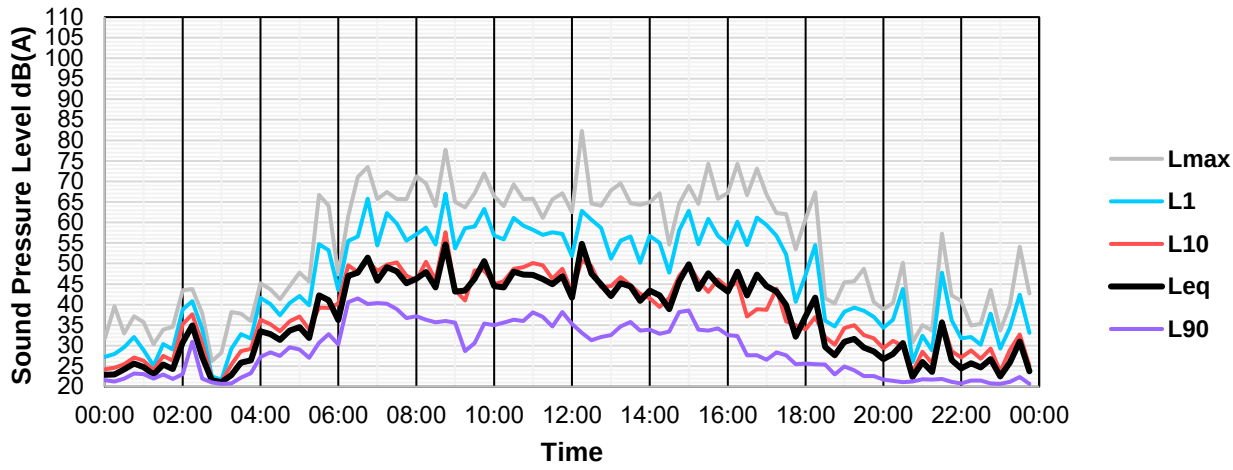

## Unattended Noise Measurements
## Wednesday 28 June 2023



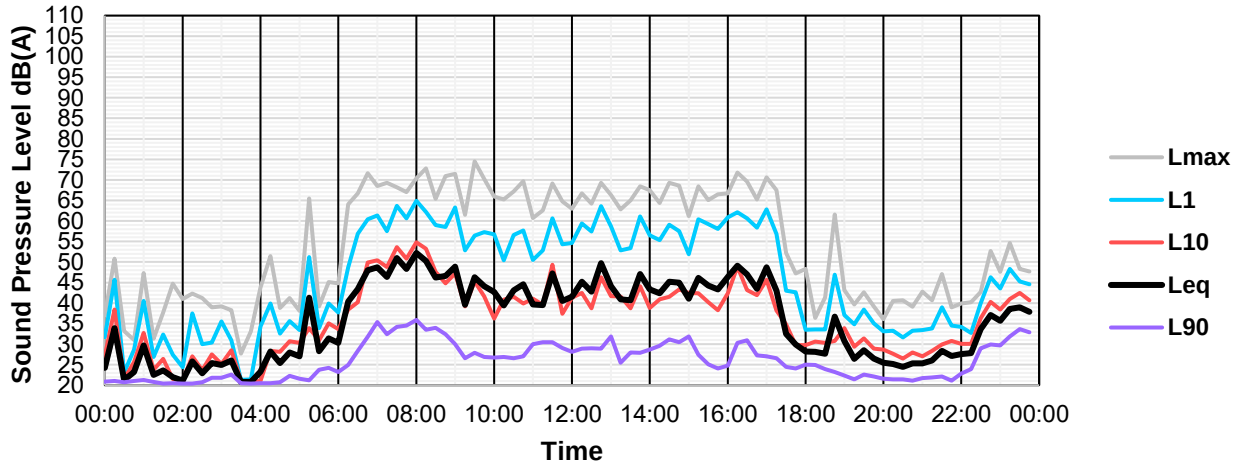

## Unattended Noise Measurements
## Thursday 29 June 2023



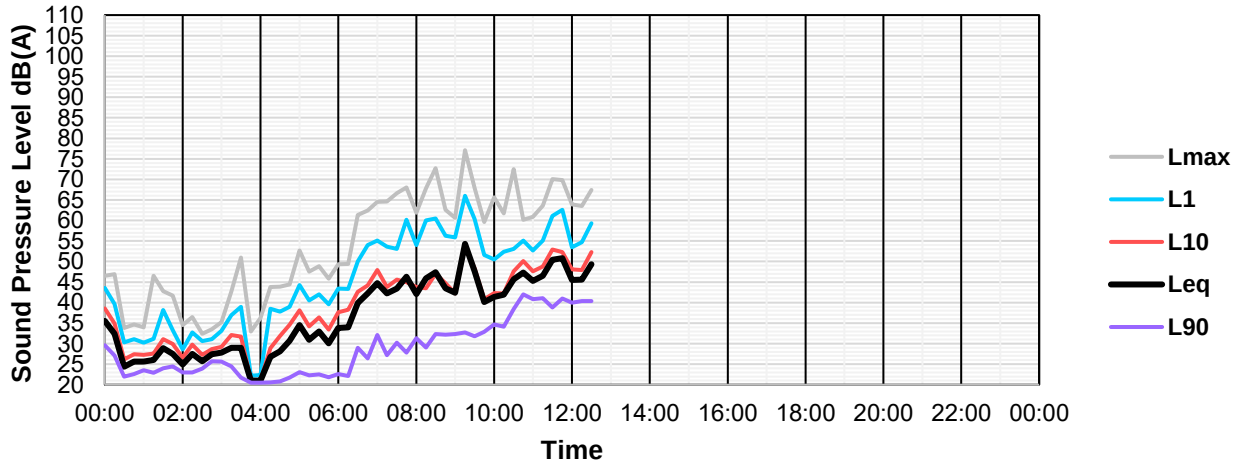
## Unattended Noise Measurements
## Friday 30 June 2023




## Unattended Noise Measurements
## Saturday 1 July 2023




## Unattended Noise Measurements
## Sunday 2 July 2023



# Appendix E – Operational Noise Level

Boonenne Timbers
Predicted Operational Noise Levels at Adjacent Uses
From Activities at Existing Development

| Receiver Name | Floor | Facade | Leq,adj,1h Day dB(A) | Leq,adj,1h Evening dB(A) | Leq,adj,1h Night dB(A) | Leq,adj,11h Day dB(A) | Leq,adj,4h Evening dB(A) | Leq,adj,9h Night dB(A) |
|---|---|---|---|---|---|---|---|---|
| 156 Boonenne Road | GF | S | 44 | | 38 | 40 | | 28 |
| 169 Boonenne Road | GF | N | 39 | | 36 | 36 | | 27 |
| 186 Boonenne Road | GF | S | 42 | | 35 | 38 | | 26 |

# Boonenne Timbers
# ISO9613 Calculation Method
# Predicted Operational Noise Levels at Adjacent Uses
# From Activities at Existing Development

**Legend**

| | | |
|---|---|---|
| Source | | Source name |
| Source type | | Type of source (point, line, area) |
| time slice | | Name of time slice |
| Li | dB(A) | Level inside |
| R'w | dB | Rated transmission loss |
| L'w | dB(A) | Sound power per m, m² |
| Lw | dB(A) | Sound power per unit |
| l or A | m,m² | Size of source (Length or area) |
| KI | dB | Correction for source impulsiveness |
| KT | dB | Correction for source tonality |
| Ko | dB | Correction for propagation in limited spacial angle |
| S | m | Distance source - receiver |
| Adiv | dB | Mean attenuation due to geometrical spreading |
| Agr | dB | Mean attenuation due to ground effect |
| Abar | dB | Mean attenuation due to screening |
| Aatm | dB | Mean attenuation due to air absorption |
| Amisc | dB | Mean attenuation due to foliage, industrial areas and building areas |
| ADI | dB | Mean directivity correction |
| dLrefl | dB(A) | Level increase due to reflections |
| Ls | dB(A) | Unassessed sound pressure level at receiver Ls=Lw+Ko+ADI+Adiv+Agr+Abar+Aatm+Afol_site_house+Awind+dLrefl |
| dLw | dB | Correction due to source operation time |
| Cmet | dB | Meteorological correction |
| ZR | dB | Correction for rest periods |
| Lr | dB(A) | Assessed level of time slice |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Existing Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dB(A) | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Receiver: 156 Boonenne Road Floor: GF Dir: S Leq,ajd,1h,Day: 44 dB(A) Leq,adj,1h,Evening: dB(A) Leq,adj,1h,Night: 38 dB(A) Leq,adj,11h,Day: 40 dB(A) Leq,adj,4h,Evening: dB(A) Leq,adj,9h,Night: 28 dB(A) | | | | | | | | | | | | | | | | | | | | | | | |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 422.67 | -63.5 | -2.0 | -3.2 | -1.7 | 0.00 | 0.0 | 0.1 | 12.9 | 0.0 | 0.0 | 0.0 | 12.9 |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 422.67 | -63.5 | -2.0 | -3.2 | -1.7 | 0.00 | 0.0 | 0.1 | 12.9 | | | | |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 422.67 | -63.5 | -2.0 | -3.2 | -1.7 | 0.00 | 0.0 | 0.1 | 12.9 | 0.8 | 0.0 | 0.0 | 13.7 |
| Carpark | PLot | Leq,adj,11 | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 422.67 | -63.5 | -2.0 | -3.2 | -1.7 | 0.00 | 0.0 | 0.1 | 12.9 | -0.6 | 0.0 | 0.0 | 12.2 |
| Carpark | PLot | Leq,adj,4h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 422.67 | -63.5 | -2.0 | -3.2 | -1.7 | 0.00 | 0.0 | 0.1 | 12.9 | | 0.0 | | |
| Carpark | PLot | Leq,adj,9h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 422.67 | -63.5 | -2.0 | -3.2 | -1.7 | 0.00 | 0.0 | 0.1 | 12.9 | -8.8 | 0.0 | 0.0 | 4.1 |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 326.86 | -61.3 | -1.2 | -4.1 | -4.5 | 0.00 | 0.0 | 0.0 | 42.9 | -4.8 | 0.0 | 0.0 | 43.1 |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 326.86 | -61.3 | -1.2 | -4.1 | -4.5 | 0.00 | 0.0 | 0.0 | 42.9 | | | | |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 326.86 | -61.3 | -1.2 | -4.1 | -4.5 | 0.00 | 0.0 | 0.0 | 42.9 | | 0.0 | | |
| Chainsaw | Point | Leq,adj,11 | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 326.86 | -61.3 | -1.2 | -4.1 | -4.5 | 0.00 | 0.0 | 0.0 | 42.9 | -10.4 | 0.0 | 0.0 | 37.5 |
| Chainsaw | Point | Leq,adj,4h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 326.86 | -61.3 | -1.2 | -4.1 | -4.5 | 0.00 | 0.0 | 0.0 | 42.9 | | 0.0 | | |
| Chainsaw | Point | Leq,adj,9h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 326.86 | -61.3 | -1.2 | -4.1 | -4.5 | 0.00 | 0.0 | 0.0 | 42.9 | | 0.0 | | |
| Circular Saw 1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 442.64 | -63.9 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.3 | -10.0 | 0.0 | 0.0 | 21.3 |
| Circular Saw 1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 442.64 | -63.9 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.3 | | | | |
| Circular Saw 1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 442.64 | -63.9 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.3 | -10.0 | 0.0 | 0.0 | 21.3 |
| Circular Saw 1 | Point | Leq,adj,11 | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 442.64 | -63.9 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.3 | -11.4 | 0.0 | 0.0 | 19.9 |
| Circular Saw 1 | Point | Leq,adj,4h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 442.64 | -63.9 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.3 | | 0.0 | | |
| Circular Saw 1 | Point | Leq,adj,9h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 442.64 | -63.9 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.3 | -19.5 | 0.0 | 0.0 | 11.8 |
| Circular Saw 2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 445.71 | -64.0 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.2 | -10.0 | 0.0 | 0.0 | 21.2 |
| Circular Saw 2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 445.71 | -64.0 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.2 | | | | |
| Circular Saw 2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 445.71 | -64.0 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.2 | -10.0 | 0.0 | 0.0 | 21.2 |
| Circular Saw 2 | Point | Leq,adj,11 | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 445.71 | -64.0 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.2 | -11.4 | 0.0 | 0.0 | 19.8 |
| Circular Saw 2 | Point | Leq,adj,4h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 445.71 | -64.0 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.2 | | 0.0 | | |
| Circular Saw 2 | Point | Leq,adj,9h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 445.71 | -64.0 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.2 | -19.5 | 0.0 | 0.0 | 11.7 |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 448.01 | -64.0 | -0.1 | -4.4 | -2.1 | 0.00 | 0.0 | 0.1 | 17.8 | 0.0 | 0.0 | 0.0 | 17.8 |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 448.01 | -64.0 | -0.1 | -4.4 | -2.1 | 0.00 | 0.0 | 0.1 | 17.8 | | | | |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 448.01 | -64.0 | -0.1 | -4.4 | -2.1 | 0.00 | 0.0 | 0.1 | 17.8 | 0.0 | 0.0 | 0.0 | 17.8 |
| Conveyor Belt | Area | Leq,adj,11 | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 448.01 | -64.0 | -0.1 | -4.4 | -2.1 | 0.00 | 0.0 | 0.1 | 17.8 | -1.4 | 0.0 | 0.0 | 16.4 |
| Conveyor Belt | Area | Leq,adj,4h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 448.01 | -64.0 | -0.1 | -4.4 | -2.1 | 0.00 | 0.0 | 0.1 | 17.8 | | 0.0 | | |
| Conveyor Belt | Area | Leq,adj,9h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 448.01 | -64.0 | -0.1 | -4.4 | -2.1 | 0.00 | 0.0 | 0.1 | 17.8 | -9.5 | 0.0 | 0.0 | 8.3 |
| Flexi North-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 451.66 | -64.1 | -4.8 | -1.8 | -0.6 | 0.00 | 0.0 | 0.0 | 14.4 | 0.0 | 0.0 | 0.0 | 19.4 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Existing Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dB(A) | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Flexi North-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 451.66 | -64.1 | -4.8 | -1.8 | -0.6 | 0.00 | 0.0 | 0.0 | 14.4 | | | | |
| Flexi North-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 451.66 | -64.1 | -4.8 | -1.8 | -0.6 | 0.00 | 0.0 | 0.0 | 14.4 | 0.0 | 0.0 | 0.0 | 19.4 |
| Flexi North-Noise Breakout | Area | Leq,adj,11 | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 451.66 | -64.1 | -4.8 | -1.8 | -0.6 | 0.00 | 0.0 | 0.0 | 14.4 | -1.4 | 0.0 | 0.0 | 18.1 |
| Flexi North-Noise Breakout | Area | Leq,adj,4h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 451.66 | -64.1 | -4.8 | -1.8 | -0.6 | 0.00 | 0.0 | 0.0 | 14.4 | | 0.0 | | |
| Flexi North-Noise Breakout | Area | Leq,adj,9h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 451.66 | -64.1 | -4.8 | -1.8 | -0.6 | 0.00 | 0.0 | 0.0 | 14.4 | -9.5 | 0.0 | 0.0 | 9.9 |
| Flexi South-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 455.09 | -64.2 | -4.8 | -8.0 | -0.3 | 0.00 | 0.0 | 0.0 | 8.5 | 0.0 | 0.0 | 0.0 | 13.5 |
| Flexi South-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 455.09 | -64.2 | -4.8 | -8.0 | -0.3 | 0.00 | 0.0 | 0.0 | 8.5 | | | | |
| Flexi South-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 455.09 | -64.2 | -4.8 | -8.0 | -0.3 | 0.00 | 0.0 | 0.0 | 8.5 | 0.0 | 0.0 | 0.0 | 13.5 |
| Flexi South-Noise Breakout | Area | Leq,adj,11 | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 455.09 | -64.2 | -4.8 | -8.0 | -0.3 | 0.00 | 0.0 | 0.0 | 8.5 | -1.4 | 0.0 | 0.0 | 12.1 |
| Flexi South-Noise Breakout | Area | Leq,adj,4h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 455.09 | -64.2 | -4.8 | -8.0 | -0.3 | 0.00 | 0.0 | 0.0 | 8.5 | | 0.0 | | |
| Flexi South-Noise Breakout | Area | Leq,adj,9h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 455.09 | -64.2 | -4.8 | -8.0 | -0.3 | 0.00 | 0.0 | 0.0 | 8.5 | -9.5 | 0.0 | 0.0 | 3.9 |
| Forklift North | Area | Leq,adj,1h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 300.36 | -60.5 | -1.4 | -3.9 | -1.8 | 0.00 | 0.0 | 0.0 | 24.3 | 0.0 | 0.0 | 0.0 | 29.3 |
| Forklift North | Area | Leq,adj,1h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 300.36 | -60.5 | -1.4 | -3.9 | -1.8 | 0.00 | 0.0 | 0.0 | 24.3 | | | | |
| Forklift North | Area | Leq,adj,1h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 300.36 | -60.5 | -1.4 | -3.9 | -1.8 | 0.00 | 0.0 | 0.0 | 24.3 | 0.0 | 0.0 | 0.0 | 29.3 |
| Forklift North | Area | Leq,adj,11 | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 300.36 | -60.5 | -1.4 | -3.9 | -1.8 | 0.00 | 0.0 | 0.0 | 24.3 | -1.4 | 0.0 | 0.0 | 28.0 |
| Forklift North | Area | Leq,adj,4h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 300.36 | -60.5 | -1.4 | -3.9 | -1.8 | 0.00 | 0.0 | 0.0 | 24.3 | | 0.0 | | |
| Forklift North | Area | Leq,adj,9h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 300.36 | -60.5 | -1.4 | -3.9 | -1.8 | 0.00 | 0.0 | 0.0 | 24.3 | -9.5 | 0.0 | 0.0 | 19.8 |
| Forklift South | Area | Leq,adj,1h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 396.69 | -63.0 | -2.2 | -3.5 | -2.3 | 0.00 | 0.0 | 0.0 | 21.1 | 0.0 | 0.0 | 0.0 | 26.1 |
| Forklift South | Area | Leq,adj,1h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 396.69 | -63.0 | -2.2 | -3.5 | -2.3 | 0.00 | 0.0 | 0.0 | 21.1 | | | | |
| Forklift South | Area | Leq,adj,1h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 396.69 | -63.0 | -2.2 | -3.5 | -2.3 | 0.00 | 0.0 | 0.0 | 21.1 | 0.0 | 0.0 | 0.0 | 26.1 |
| Forklift South | Area | Leq,adj,11 | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 396.69 | -63.0 | -2.2 | -3.5 | -2.3 | 0.00 | 0.0 | 0.0 | 21.1 | -1.4 | 0.0 | 0.0 | 24.7 |
| Forklift South | Area | Leq,adj,4h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 396.69 | -63.0 | -2.2 | -3.5 | -2.3 | 0.00 | 0.0 | 0.0 | 21.1 | | 0.0 | | |
| Forklift South | Area | Leq,adj,9h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 396.69 | -63.0 | -2.2 | -3.5 | -2.3 | 0.00 | 0.0 | 0.0 | 21.1 | -9.5 | 0.0 | 0.0 | 16.6 |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 453.53 | -64.1 | -1.1 | -14.6 | -1.8 | 0.00 | 0.0 | 8.7 | 27.3 | 0.0 | 0.0 | 0.0 | 32.3 |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 453.53 | -64.1 | -1.1 | -14.6 | -1.8 | 0.00 | 0.0 | 8.7 | 27.3 | | | | |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 453.53 | -64.1 | -1.1 | -14.6 | -1.8 | 0.00 | 0.0 | 8.7 | 27.3 | 0.0 | 0.0 | 0.0 | 32.3 |
| Shredder Breakout | Point | Leq,adj,11 | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 453.53 | -64.1 | -1.1 | -14.6 | -1.8 | 0.00 | 0.0 | 8.7 | 27.3 | -1.4 | 0.0 | 0.0 | 30.9 |
| Shredder Breakout | Point | Leq,adj,4h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 453.53 | -64.1 | -1.1 | -14.6 | -1.8 | 0.00 | 0.0 | 8.7 | 27.3 | | 0.0 | | |
| Shredder Breakout | Point | Leq,adj,9h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 453.53 | -64.1 | -1.1 | -14.6 | -1.8 | 0.00 | 0.0 | 8.7 | 27.3 | -9.5 | 0.0 | 0.0 | 22.7 |
| Shredder Shed-Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 453.85 | -64.1 | -4.5 | -2.8 | -0.6 | 0.00 | 0.0 | 0.7 | 22.7 | 0.0 | 0.0 | 0.0 | 27.7 |
| Shredder Shed-Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 453.85 | -64.1 | -4.5 | -2.8 | -0.6 | 0.00 | 0.0 | 0.7 | 22.7 | | | | |
| Shredder Shed-Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 453.85 | -64.1 | -4.5 | -2.8 | -0.6 | 0.00 | 0.0 | 0.7 | 22.7 | 0.0 | 0.0 | 0.0 | 27.7 |
| Shredder Shed-Eastern Facade | Area | Leq,adj,11 | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 453.85 | -64.1 | -4.5 | -2.8 | -0.6 | 0.00 | 0.0 | 0.7 | 22.7 | -1.4 | 0.0 | 0.0 | 26.3 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Existing Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dB(A) | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Shredder Shed-Eastern Facade | Area | Leq,adj,4h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 453.85 | -64.1 | -4.5 | -2.8 | -0.6 | 0.00 | 0.0 | 0.7 | 22.7 | | 0.0 | | |
| Shredder Shed-Eastern Facade | Area | Leq,adj,9h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 453.85 | -64.1 | -4.5 | -2.8 | -0.6 | 0.00 | 0.0 | 0.7 | 22.7 | -9.5 | 0.0 | 0.0 | 18.2 |
| Shredder Shed-Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 451.38 | -64.1 | -4.6 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | 0.0 | 0.0 | 0.0 | 26.8 |
| Shredder Shed-Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 451.38 | -64.1 | -4.6 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | | | | |
| Shredder Shed-Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 451.38 | -64.1 | -4.6 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | 0.0 | 0.0 | 0.0 | 26.8 |
| Shredder Shed-Northern Facade | Area | Leq,adj,11 | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 451.38 | -64.1 | -4.6 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | -1.4 | 0.0 | 0.0 | 25.4 |
| Shredder Shed-Northern Facade | Area | Leq,adj,4h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 451.38 | -64.1 | -4.6 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | | 0.0 | | |
| Shredder Shed-Northern Facade | Area | Leq,adj,9h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 451.38 | -64.1 | -4.6 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | -9.5 | 0.0 | 0.0 | 17.3 |
| Shredder Shed-Roof | Area | Leq,adj,1h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 454.10 | -64.1 | -4.2 | -1.9 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | 0.0 | 0.0 | 0.0 | 26.8 |
| Shredder Shed-Roof | Area | Leq,adj,1h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 454.10 | -64.1 | -4.2 | -1.9 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | | | | |
| Shredder Shed-Roof | Area | Leq,adj,1h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 454.10 | -64.1 | -4.2 | -1.9 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | 0.0 | 0.0 | 0.0 | 26.8 |
| Shredder Shed-Roof | Area | Leq,adj,11 | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 454.10 | -64.1 | -4.2 | -1.9 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | -1.4 | 0.0 | 0.0 | 25.4 |
| Shredder Shed-Roof | Area | Leq,adj,4h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 454.10 | -64.1 | -4.2 | -1.9 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | | 0.0 | | |
| Shredder Shed-Roof | Area | Leq,adj,9h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 454.10 | -64.1 | -4.2 | -1.9 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | -9.5 | 0.0 | 0.0 | 17.2 |
| Shredder Shed-Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 456.93 | -64.2 | -4.6 | -9.3 | -0.3 | 0.00 | 0.0 | 0.0 | 14.6 | 0.0 | 0.0 | 0.0 | 19.6 |
| Shredder Shed-Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 456.93 | -64.2 | -4.6 | -9.3 | -0.3 | 0.00 | 0.0 | 0.0 | 14.6 | | | | |
| Shredder Shed-Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 456.93 | -64.2 | -4.6 | -9.3 | -0.3 | 0.00 | 0.0 | 0.0 | 14.6 | 0.0 | 0.0 | 0.0 | 19.6 |
| Shredder Shed-Southern Facade | Area | Leq,adj,11 | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 456.93 | -64.2 | -4.6 | -9.3 | -0.3 | 0.00 | 0.0 | 0.0 | 14.6 | -1.4 | 0.0 | 0.0 | 18.2 |
| Shredder Shed-Southern Facade | Area | Leq,adj,4h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 456.93 | -64.2 | -4.6 | -9.3 | -0.3 | 0.00 | 0.0 | 0.0 | 14.6 | | 0.0 | | |
| Shredder Shed-Southern Facade | Area | Leq,adj,9h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 456.93 | -64.2 | -4.6 | -9.3 | -0.3 | 0.00 | 0.0 | 0.0 | 14.6 | -9.5 | 0.0 | 0.0 | 10.0 |
| Shredder Shed-Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 454.58 | -64.1 | -4.6 | -9.0 | -0.3 | 0.00 | 0.0 | 0.0 | 16.0 | 0.0 | 0.0 | 0.0 | 21.0 |
| Shredder Shed-Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 454.58 | -64.1 | -4.6 | -9.0 | -0.3 | 0.00 | 0.0 | 0.0 | 16.0 | | | | |
| Shredder Shed-Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 454.58 | -64.1 | -4.6 | -9.0 | -0.3 | 0.00 | 0.0 | 0.0 | 16.0 | 0.0 | 0.0 | 0.0 | 21.0 |
| Shredder Shed-Western Facade | Area | Leq,adj,11 | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 454.58 | -64.1 | -4.6 | -9.0 | -0.3 | 0.00 | 0.0 | 0.0 | 16.0 | -1.4 | 0.0 | 0.0 | 19.6 |
| Shredder Shed-Western Facade | Area | Leq,adj,4h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 454.58 | -64.1 | -4.6 | -9.0 | -0.3 | 0.00 | 0.0 | 0.0 | 16.0 | | 0.0 | | |
| Shredder Shed-Western Facade | Area | Leq,adj,9h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 454.58 | -64.1 | -4.6 | -9.0 | -0.3 | 0.00 | 0.0 | 0.0 | 16.0 | -9.5 | 0.0 | 0.0 | 11.4 |
| Truck Movements | Line | Leq,adj,1h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 276.38 | -59.8 | -2.1 | -3.5 | -1.4 | 0.00 | 0.0 | 0.0 | 18.7 | 7.8 | 0.0 | 0.0 | 26.5 |
| Truck Movements | Line | Leq,adj,1h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 276.38 | -59.8 | -2.1 | -3.5 | -1.4 | 0.00 | 0.0 | 0.0 | 18.7 | | | | |
| Truck Movements | Line | Leq,adj,1h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 276.38 | -59.8 | -2.1 | -3.5 | -1.4 | 0.00 | 0.0 | 0.0 | 18.7 | 7.8 | 0.0 | 0.0 | 26.5 |
| Truck Movements | Line | Leq,adj,11 | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 276.38 | -59.8 | -2.1 | -3.5 | -1.4 | 0.00 | 0.0 | 0.0 | 18.7 | 6.7 | 0.0 | 0.0 | 25.4 |
| Truck Movements | Line | Leq,adj,4h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 276.38 | -59.8 | -2.1 | -3.5 | -1.4 | 0.00 | 0.0 | 0.0 | 18.7 | | 0.0 | | |
| Truck Movements | Line | Leq,adj,9h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 276.38 | -59.8 | -2.1 | -3.5 | -1.4 | 0.00 | 0.0 | 0.0 | 18.7 | -1.8 | 0.0 | 0.0 | 17.0 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Existing Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dB(A) | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Receiver: 169 Boonenne Road Floor: GF Dir: N Leq,ajd,1h,Day: 39 dB(A) Leq,adj,1h,Evening: dB(A) Leq,adj,1h,Night: 36 dB(A) Leq,adj,11h,Day: 36 dB(A) Leq,adj,4h,Evening: dB(A) Leq,adj,9h,Night: 27 dB(A) | | | | | | | | | | | | | | | | | | | | | | | |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 534.77 | -65.6 | -2.1 | -2.3 | -2.5 | 0.00 | 0.0 | 0.0 | 10.7 | 0.0 | 0.0 | 0.0 | 10.7 |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 534.77 | -65.6 | -2.1 | -2.3 | -2.5 | 0.00 | 0.0 | 0.0 | 10.7 | | | | |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 534.77 | -65.6 | -2.1 | -2.3 | -2.5 | 0.00 | 0.0 | 0.0 | 10.7 | 0.8 | 0.0 | 0.0 | 11.5 |
| Carpark | PLot | Leq,adj,11 | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 534.77 | -65.6 | -2.1 | -2.3 | -2.5 | 0.00 | 0.0 | 0.0 | 10.7 | -0.6 | 0.0 | 0.0 | 10.1 |
| Carpark | PLot | Leq,adj,4h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 534.77 | -65.6 | -2.1 | -2.3 | -2.5 | 0.00 | 0.0 | 0.0 | 10.7 | | 0.0 | | |
| Carpark | PLot | Leq,adj,9h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 534.77 | -65.6 | -2.1 | -2.3 | -2.5 | 0.00 | 0.0 | 0.0 | 10.7 | -8.8 | 0.0 | 0.0 | 2.0 |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 630.59 | -67.0 | -1.2 | -4.1 | -6.5 | 0.00 | 0.0 | 0.0 | 35.2 | -4.8 | 0.0 | 0.0 | 35.4 |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 630.59 | -67.0 | -1.2 | -4.1 | -6.5 | 0.00 | 0.0 | 0.0 | 35.2 | | | | |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 630.59 | -67.0 | -1.2 | -4.1 | -6.5 | 0.00 | 0.0 | 0.0 | 35.2 | | 0.0 | | |
| Chainsaw | Point | Leq,adj,11 | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 630.59 | -67.0 | -1.2 | -4.1 | -6.5 | 0.00 | 0.0 | 0.0 | 35.2 | -10.4 | 0.0 | 0.0 | 29.8 |
| Chainsaw | Point | Leq,adj,4h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 630.59 | -67.0 | -1.2 | -4.1 | -6.5 | 0.00 | 0.0 | 0.0 | 35.2 | | 0.0 | | |
| Chainsaw | Point | Leq,adj,9h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 630.59 | -67.0 | -1.2 | -4.1 | -6.5 | 0.00 | 0.0 | 0.0 | 35.2 | | 0.0 | | |
| Circular Saw 1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 512.97 | -65.2 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | -10.0 | 0.0 | 0.0 | 19.7 |
| Circular Saw 1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 512.97 | -65.2 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | | | | |
| Circular Saw 1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 512.97 | -65.2 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | -10.0 | 0.0 | 0.0 | 19.7 |
| Circular Saw 1 | Point | Leq,adj,11 | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 512.97 | -65.2 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | -11.4 | 0.0 | 0.0 | 18.3 |
| Circular Saw 1 | Point | Leq,adj,4h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 512.97 | -65.2 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | | 0.0 | | |
| Circular Saw 1 | Point | Leq,adj,9h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 512.97 | -65.2 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | -19.5 | 0.0 | 0.0 | 10.1 |
| Circular Saw 2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 510.28 | -65.1 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | -10.0 | 0.0 | 0.0 | 19.7 |
| Circular Saw 2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 510.28 | -65.1 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | | | | |
| Circular Saw 2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 510.28 | -65.1 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | -10.0 | 0.0 | 0.0 | 19.7 |
| Circular Saw 2 | Point | Leq,adj,11 | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 510.28 | -65.1 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | -11.4 | 0.0 | 0.0 | 18.3 |
| Circular Saw 2 | Point | Leq,adj,4h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 510.28 | -65.1 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | | 0.0 | | |
| Circular Saw 2 | Point | Leq,adj,9h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 510.28 | -65.1 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | -19.5 | 0.0 | 0.0 | 10.2 |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 507.63 | -65.1 | 0.0 | -4.3 | -2.3 | 0.00 | 0.0 | 0.1 | 16.7 | 0.0 | 0.0 | 0.0 | 16.7 |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 507.63 | -65.1 | 0.0 | -4.3 | -2.3 | 0.00 | 0.0 | 0.1 | 16.7 | | | | |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 507.63 | -65.1 | 0.0 | -4.3 | -2.3 | 0.00 | 0.0 | 0.1 | 16.7 | 0.0 | 0.0 | 0.0 | 16.7 |
| Conveyor Belt | Area | Leq,adj,11 | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 507.63 | -65.1 | 0.0 | -4.3 | -2.3 | 0.00 | 0.0 | 0.1 | 16.7 | -1.4 | 0.0 | 0.0 | 15.3 |
| Conveyor Belt | Area | Leq,adj,4h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 507.63 | -65.1 | 0.0 | -4.3 | -2.3 | 0.00 | 0.0 | 0.1 | 16.7 | | 0.0 | | |
| Conveyor Belt | Area | Leq,adj,9h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 507.63 | -65.1 | 0.0 | -4.3 | -2.3 | 0.00 | 0.0 | 0.1 | 16.7 | -9.5 | 0.0 | 0.0 | 7.2 |
| Flexi North-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 504.89 | -65.1 | -5.0 | -3.9 | -0.3 | 0.00 | 0.0 | 0.0 | 11.4 | 0.0 | 0.0 | 0.0 | 16.4 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Existing Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dB(A) | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Flexi North-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 504.89 | -65.1 | -5.0 | -3.9 | -0.3 | 0.00 | 0.0 | 0.0 | 11.4 | | | | |
| Flexi North-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 504.89 | -65.1 | -5.0 | -3.9 | -0.3 | 0.00 | 0.0 | 0.0 | 11.4 | 0.0 | 0.0 | 0.0 | 16.4 |
| Flexi North-Noise Breakout | Area | Leq,adj,11 | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 504.89 | -65.1 | -5.0 | -3.9 | -0.3 | 0.00 | 0.0 | 0.0 | 11.4 | -1.4 | 0.0 | 0.0 | 15.1 |
| Flexi North-Noise Breakout | Area | Leq,adj,4h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 504.89 | -65.1 | -5.0 | -3.9 | -0.3 | 0.00 | 0.0 | 0.0 | 11.4 | | 0.0 | | |
| Flexi North-Noise Breakout | Area | Leq,adj,9h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 504.89 | -65.1 | -5.0 | -3.9 | -0.3 | 0.00 | 0.0 | 0.0 | 11.4 | -9.5 | 0.0 | 0.0 | 6.9 |
| Flexi South-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 501.40 | -65.0 | -5.0 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 13.0 | 0.0 | 0.0 | 0.0 | 18.0 |
| Flexi South-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 501.40 | -65.0 | -5.0 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 13.0 | | | | |
| Flexi South-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 501.40 | -65.0 | -5.0 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 13.0 | 0.0 | 0.0 | 0.0 | 18.0 |
| Flexi South-Noise Breakout | Area | Leq,adj,11 | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 501.40 | -65.0 | -5.0 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 13.0 | -1.4 | 0.0 | 0.0 | 16.6 |
| Flexi South-Noise Breakout | Area | Leq,adj,4h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 501.40 | -65.0 | -5.0 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 13.0 | | 0.0 | | |
| Flexi South-Noise Breakout | Area | Leq,adj,9h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 501.40 | -65.0 | -5.0 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 13.0 | -9.5 | 0.0 | 0.0 | 8.5 |
| Forklift North | Area | Leq,adj,1h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 656.12 | -67.3 | -1.4 | -3.1 | -3.6 | 0.00 | 0.0 | 0.0 | 16.5 | 0.0 | 0.0 | 0.0 | 21.5 |
| Forklift North | Area | Leq,adj,1h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 656.12 | -67.3 | -1.4 | -3.1 | -3.6 | 0.00 | 0.0 | 0.0 | 16.5 | | | | |
| Forklift North | Area | Leq,adj,1h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 656.12 | -67.3 | -1.4 | -3.1 | -3.6 | 0.00 | 0.0 | 0.0 | 16.5 | 0.0 | 0.0 | 0.0 | 21.5 |
| Forklift North | Area | Leq,adj,11 | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 656.12 | -67.3 | -1.4 | -3.1 | -3.6 | 0.00 | 0.0 | 0.0 | 16.5 | -1.4 | 0.0 | 0.0 | 20.2 |
| Forklift North | Area | Leq,adj,4h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 656.12 | -67.3 | -1.4 | -3.1 | -3.6 | 0.00 | 0.0 | 0.0 | 16.5 | | 0.0 | | |
| Forklift North | Area | Leq,adj,9h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 656.12 | -67.3 | -1.4 | -3.1 | -3.6 | 0.00 | 0.0 | 0.0 | 16.5 | -9.5 | 0.0 | 0.0 | 12.0 |
| Forklift South | Area | Leq,adj,1h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 557.08 | -65.9 | -1.9 | -3.6 | -2.9 | 0.00 | 0.0 | 0.0 | 17.7 | 0.0 | 0.0 | 0.0 | 22.7 |
| Forklift South | Area | Leq,adj,1h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 557.08 | -65.9 | -1.9 | -3.6 | -2.9 | 0.00 | 0.0 | 0.0 | 17.7 | | | | |
| Forklift South | Area | Leq,adj,1h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 557.08 | -65.9 | -1.9 | -3.6 | -2.9 | 0.00 | 0.0 | 0.0 | 17.7 | 0.0 | 0.0 | 0.0 | 22.7 |
| Forklift South | Area | Leq,adj,11 | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 557.08 | -65.9 | -1.9 | -3.6 | -2.9 | 0.00 | 0.0 | 0.0 | 17.7 | -1.4 | 0.0 | 0.0 | 21.3 |
| Forklift South | Area | Leq,adj,4h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 557.08 | -65.9 | -1.9 | -3.6 | -2.9 | 0.00 | 0.0 | 0.0 | 17.7 | | 0.0 | | |
| Forklift South | Area | Leq,adj,9h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 557.08 | -65.9 | -1.9 | -3.6 | -2.9 | 0.00 | 0.0 | 0.0 | 17.7 | -9.5 | 0.0 | 0.0 | 13.2 |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 503.01 | -65.0 | -1.0 | -9.3 | -2.3 | 0.00 | 0.0 | 4.1 | 26.6 | 0.0 | 0.0 | 0.0 | 31.6 |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 503.01 | -65.0 | -1.0 | -9.3 | -2.3 | 0.00 | 0.0 | 4.1 | 26.6 | | | | |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 503.01 | -65.0 | -1.0 | -9.3 | -2.3 | 0.00 | 0.0 | 4.1 | 26.6 | 0.0 | 0.0 | 0.0 | 31.6 |
| Shredder Breakout | Point | Leq,adj,11 | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 503.01 | -65.0 | -1.0 | -9.3 | -2.3 | 0.00 | 0.0 | 4.1 | 26.6 | -1.4 | 0.0 | 0.0 | 30.2 |
| Shredder Breakout | Point | Leq,adj,4h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 503.01 | -65.0 | -1.0 | -9.3 | -2.3 | 0.00 | 0.0 | 4.1 | 26.6 | | 0.0 | | |
| Shredder Breakout | Point | Leq,adj,9h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 503.01 | -65.0 | -1.0 | -9.3 | -2.3 | 0.00 | 0.0 | 4.1 | 26.6 | -9.5 | 0.0 | 0.0 | 22.1 |
| Shredder Shed-Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.88 | -65.0 | -4.7 | -3.2 | -0.4 | 0.00 | 0.0 | 0.0 | 20.8 | 0.0 | 0.0 | 0.0 | 25.8 |
| Shredder Shed-Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.88 | -65.0 | -4.7 | -3.2 | -0.4 | 0.00 | 0.0 | 0.0 | 20.8 | | | | |
| Shredder Shed-Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.88 | -65.0 | -4.7 | -3.2 | -0.4 | 0.00 | 0.0 | 0.0 | 20.8 | 0.0 | 0.0 | 0.0 | 25.8 |
| Shredder Shed-Eastern Facade | Area | Leq,adj,11 | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.88 | -65.0 | -4.7 | -3.2 | -0.4 | 0.00 | 0.0 | 0.0 | 20.8 | -1.4 | 0.0 | 0.0 | 24.4 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Existing Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dB(A) | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Shredder Shed-Eastern Facade | Area | Leq,adj,4h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.88 | -65.0 | -4.7 | -3.2 | -0.4 | 0.00 | 0.0 | 0.0 | 20.8 | | 0.0 | | |
| Shredder Shed-Eastern Facade | Area | Leq,adj,9h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.88 | -65.0 | -4.7 | -3.2 | -0.4 | 0.00 | 0.0 | 0.0 | 20.8 | -9.5 | 0.0 | 0.0 | 16.3 |
| Shredder Shed-Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 505.49 | -65.1 | -4.8 | -3.6 | -0.2 | 0.00 | 0.0 | 0.0 | 19.3 | 0.0 | 0.0 | 0.0 | 24.3 |
| Shredder Shed-Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 505.49 | -65.1 | -4.8 | -3.6 | -0.2 | 0.00 | 0.0 | 0.0 | 19.3 | | | | |
| Shredder Shed-Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 505.49 | -65.1 | -4.8 | -3.6 | -0.2 | 0.00 | 0.0 | 0.0 | 19.3 | 0.0 | 0.0 | 0.0 | 24.3 |
| Shredder Shed-Northern Facade | Area | Leq,adj,11 | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 505.49 | -65.1 | -4.8 | -3.6 | -0.2 | 0.00 | 0.0 | 0.0 | 19.3 | -1.4 | 0.0 | 0.0 | 22.9 |
| Shredder Shed-Northern Facade | Area | Leq,adj,4h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 505.49 | -65.1 | -4.8 | -3.6 | -0.2 | 0.00 | 0.0 | 0.0 | 19.3 | | 0.0 | | |
| Shredder Shed-Northern Facade | Area | Leq,adj,9h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 505.49 | -65.1 | -4.8 | -3.6 | -0.2 | 0.00 | 0.0 | 0.0 | 19.3 | -9.5 | 0.0 | 0.0 | 14.7 |
| Shredder Shed-Roof | Area | Leq,adj,1h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 502.76 | -65.0 | -4.1 | -2.0 | -0.8 | 0.00 | 0.0 | 0.0 | 20.7 | 0.0 | 0.0 | 0.0 | 25.7 |
| Shredder Shed-Roof | Area | Leq,adj,1h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 502.76 | -65.0 | -4.1 | -2.0 | -0.8 | 0.00 | 0.0 | 0.0 | 20.7 | | | | |
| Shredder Shed-Roof | Area | Leq,adj,1h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 502.76 | -65.0 | -4.1 | -2.0 | -0.8 | 0.00 | 0.0 | 0.0 | 20.7 | 0.0 | 0.0 | 0.0 | 25.7 |
| Shredder Shed-Roof | Area | Leq,adj,11 | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 502.76 | -65.0 | -4.1 | -2.0 | -0.8 | 0.00 | 0.0 | 0.0 | 20.7 | -1.4 | 0.0 | 0.0 | 24.3 |
| Shredder Shed-Roof | Area | Leq,adj,4h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 502.76 | -65.0 | -4.1 | -2.0 | -0.8 | 0.00 | 0.0 | 0.0 | 20.7 | | 0.0 | | |
| Shredder Shed-Roof | Area | Leq,adj,9h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 502.76 | -65.0 | -4.1 | -2.0 | -0.8 | 0.00 | 0.0 | 0.0 | 20.7 | -9.5 | 0.0 | 0.0 | 16.1 |
| Shredder Shed-Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 499.84 | -65.0 | -4.7 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 20.6 | 0.0 | 0.0 | 0.0 | 25.6 |
| Shredder Shed-Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 499.84 | -65.0 | -4.7 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 20.6 | | | | |
| Shredder Shed-Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 499.84 | -65.0 | -4.7 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 20.6 | 0.0 | 0.0 | 0.0 | 25.6 |
| Shredder Shed-Southern Facade | Area | Leq,adj,11 | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 499.84 | -65.0 | -4.7 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 20.6 | -1.4 | 0.0 | 0.0 | 24.2 |
| Shredder Shed-Southern Facade | Area | Leq,adj,4h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 499.84 | -65.0 | -4.7 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 20.6 | | 0.0 | | |
| Shredder Shed-Southern Facade | Area | Leq,adj,9h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 499.84 | -65.0 | -4.7 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 20.6 | -9.5 | 0.0 | 0.0 | 16.0 |
| Shredder Shed-Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.44 | -65.0 | -4.8 | -1.8 | -0.8 | 0.00 | 0.0 | 0.0 | 21.6 | 0.0 | 0.0 | 0.0 | 26.6 |
| Shredder Shed-Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.44 | -65.0 | -4.8 | -1.8 | -0.8 | 0.00 | 0.0 | 0.0 | 21.6 | | | | |
| Shredder Shed-Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.44 | -65.0 | -4.8 | -1.8 | -0.8 | 0.00 | 0.0 | 0.0 | 21.6 | 0.0 | 0.0 | 0.0 | 26.6 |
| Shredder Shed-Western Facade | Area | Leq,adj,11 | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.44 | -65.0 | -4.8 | -1.8 | -0.8 | 0.00 | 0.0 | 0.0 | 21.6 | -1.4 | 0.0 | 0.0 | 25.2 |
| Shredder Shed-Western Facade | Area | Leq,adj,4h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.44 | -65.0 | -4.8 | -1.8 | -0.8 | 0.00 | 0.0 | 0.0 | 21.6 | | 0.0 | | |
| Shredder Shed-Western Facade | Area | Leq,adj,9h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.44 | -65.0 | -4.8 | -1.8 | -0.8 | 0.00 | 0.0 | 0.0 | 21.6 | -9.5 | 0.0 | 0.0 | 17.1 |
| Truck Movements | Line | Leq,adj,1h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 599.75 | -66.6 | -2.1 | -2.6 | -3.2 | 0.00 | 0.0 | 0.0 | 11.1 | 7.8 | 0.0 | 0.0 | 18.9 |
| Truck Movements | Line | Leq,adj,1h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 599.75 | -66.6 | -2.1 | -2.6 | -3.2 | 0.00 | 0.0 | 0.0 | 11.1 | | | | |
| Truck Movements | Line | Leq,adj,1h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 599.75 | -66.6 | -2.1 | -2.6 | -3.2 | 0.00 | 0.0 | 0.0 | 11.1 | 7.8 | 0.0 | 0.0 | 18.9 |
| Truck Movements | Line | Leq,adj,11 | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 599.75 | -66.6 | -2.1 | -2.6 | -3.2 | 0.00 | 0.0 | 0.0 | 11.1 | 6.7 | 0.0 | 0.0 | 17.8 |
| Truck Movements | Line | Leq,adj,4h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 599.75 | -66.6 | -2.1 | -2.6 | -3.2 | 0.00 | 0.0 | 0.0 | 11.1 | | 0.0 | | |
| Truck Movements | Line | Leq,adj,9h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 599.75 | -66.6 | -2.1 | -2.6 | -3.2 | 0.00 | 0.0 | 0.0 | 11.1 | -1.8 | 0.0 | 0.0 | 9.3 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Existing Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dB(A) | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Receiver: 186 Boonenne Road Floor: GF Dir: S Leq,ajd,1h,Day: 42 dB(A) Leq,adj,1h,Evening: dB(A) Leq,adj,1h,Night: 35 dB(A) Leq,adj,11h,Day: 38 dB(A) Leq,adj,4h,Evening: dB(A) Leq,adj,9h,Night: 26 dB(A) | | | | | | | | | | | | | | | | | | | | | | | |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 454.58 | -64.1 | -2.0 | -3.1 | -1.8 | 0.00 | 0.0 | 0.0 | 12.1 | 0.0 | 0.0 | 0.0 | 12.1 |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 454.58 | -64.1 | -2.0 | -3.1 | -1.8 | 0.00 | 0.0 | 0.0 | 12.1 | | | | |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 454.58 | -64.1 | -2.0 | -3.1 | -1.8 | 0.00 | 0.0 | 0.0 | 12.1 | 0.8 | 0.0 | 0.0 | 12.9 |
| Carpark | PLot | Leq,adj,11 | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 454.58 | -64.1 | -2.0 | -3.1 | -1.8 | 0.00 | 0.0 | 0.0 | 12.1 | -0.6 | 0.0 | 0.0 | 11.5 |
| Carpark | PLot | Leq,adj,4h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 454.58 | -64.1 | -2.0 | -3.1 | -1.8 | 0.00 | 0.0 | 0.0 | 12.1 | | 0.0 | | |
| Carpark | PLot | Leq,adj,9h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 454.58 | -64.1 | -2.0 | -3.1 | -1.8 | 0.00 | 0.0 | 0.0 | 12.1 | -8.8 | 0.0 | 0.0 | 3.4 |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 380.71 | -62.6 | -1.2 | -4.6 | -4.5 | 0.00 | 0.0 | 0.0 | 41.1 | -4.8 | 0.0 | 0.0 | 41.3 |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 380.71 | -62.6 | -1.2 | -4.6 | -4.5 | 0.00 | 0.0 | 0.0 | 41.1 | | | | |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 380.71 | -62.6 | -1.2 | -4.6 | -4.5 | 0.00 | 0.0 | 0.0 | 41.1 | | 0.0 | | |
| Chainsaw | Point | Leq,adj,11 | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 380.71 | -62.6 | -1.2 | -4.6 | -4.5 | 0.00 | 0.0 | 0.0 | 41.1 | -10.4 | 0.0 | 0.0 | 35.7 |
| Chainsaw | Point | Leq,adj,4h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 380.71 | -62.6 | -1.2 | -4.6 | -4.5 | 0.00 | 0.0 | 0.0 | 41.1 | | 0.0 | | |
| Chainsaw | Point | Leq,adj,9h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 380.71 | -62.6 | -1.2 | -4.6 | -4.5 | 0.00 | 0.0 | 0.0 | 41.1 | | 0.0 | | |
| Circular Saw 1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 488.50 | -64.8 | -0.6 | -4.7 | -4.0 | 0.00 | 0.0 | 0.0 | 25.3 | -10.0 | 0.0 | 0.0 | 20.3 |
| Circular Saw 1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 488.50 | -64.8 | -0.6 | -4.7 | -4.0 | 0.00 | 0.0 | 0.0 | 25.3 | | | | |
| Circular Saw 1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 488.50 | -64.8 | -0.6 | -4.7 | -4.0 | 0.00 | 0.0 | 0.0 | 25.3 | -10.0 | 0.0 | 0.0 | 20.3 |
| Circular Saw 1 | Point | Leq,adj,11 | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 488.50 | -64.8 | -0.6 | -4.7 | -4.0 | 0.00 | 0.0 | 0.0 | 25.3 | -11.4 | 0.0 | 0.0 | 18.9 |
| Circular Saw 1 | Point | Leq,adj,4h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 488.50 | -64.8 | -0.6 | -4.7 | -4.0 | 0.00 | 0.0 | 0.0 | 25.3 | | 0.0 | | |
| Circular Saw 1 | Point | Leq,adj,9h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 488.50 | -64.8 | -0.6 | -4.7 | -4.0 | 0.00 | 0.0 | 0.0 | 25.3 | -19.5 | 0.0 | 0.0 | 10.8 |
| Circular Saw 2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 499.82 | -65.0 | -0.6 | -5.3 | -3.8 | 0.00 | 0.0 | 0.0 | 24.7 | -10.0 | 0.0 | 0.0 | 19.7 |
| Circular Saw 2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 499.82 | -65.0 | -0.6 | -5.3 | -3.8 | 0.00 | 0.0 | 0.0 | 24.7 | | | | |
| Circular Saw 2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 499.82 | -65.0 | -0.6 | -5.3 | -3.8 | 0.00 | 0.0 | 0.0 | 24.7 | -10.0 | 0.0 | 0.0 | 19.7 |
| Circular Saw 2 | Point | Leq,adj,11 | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 499.82 | -65.0 | -0.6 | -5.3 | -3.8 | 0.00 | 0.0 | 0.0 | 24.7 | -11.4 | 0.0 | 0.0 | 18.3 |
| Circular Saw 2 | Point | Leq,adj,4h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 499.82 | -65.0 | -0.6 | -5.3 | -3.8 | 0.00 | 0.0 | 0.0 | 24.7 | | 0.0 | | |
| Circular Saw 2 | Point | Leq,adj,9h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 499.82 | -65.0 | -0.6 | -5.3 | -3.8 | 0.00 | 0.0 | 0.0 | 24.7 | -19.5 | 0.0 | 0.0 | 10.2 |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 492.12 | -64.8 | -0.1 | -4.6 | -2.1 | 0.00 | 0.0 | 0.1 | 16.7 | 0.0 | 0.0 | 0.0 | 16.7 |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 492.12 | -64.8 | -0.1 | -4.6 | -2.1 | 0.00 | 0.0 | 0.1 | 16.7 | | | | |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 492.12 | -64.8 | -0.1 | -4.6 | -2.1 | 0.00 | 0.0 | 0.1 | 16.7 | 0.0 | 0.0 | 0.0 | 16.7 |
| Conveyor Belt | Area | Leq,adj,11 | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 492.12 | -64.8 | -0.1 | -4.6 | -2.1 | 0.00 | 0.0 | 0.1 | 16.7 | -1.4 | 0.0 | 0.0 | 15.4 |
| Conveyor Belt | Area | Leq,adj,4h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 492.12 | -64.8 | -0.1 | -4.6 | -2.1 | 0.00 | 0.0 | 0.1 | 16.7 | | 0.0 | | |
| Conveyor Belt | Area | Leq,adj,9h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 492.12 | -64.8 | -0.1 | -4.6 | -2.1 | 0.00 | 0.0 | 0.1 | 16.7 | -9.5 | 0.0 | 0.0 | 7.2 |
| Flexi North-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 484.84 | -64.7 | -4.8 | -2.4 | -0.7 | 0.00 | 0.0 | 0.0 | 13.1 | 0.0 | 0.0 | 0.0 | 18.1 |

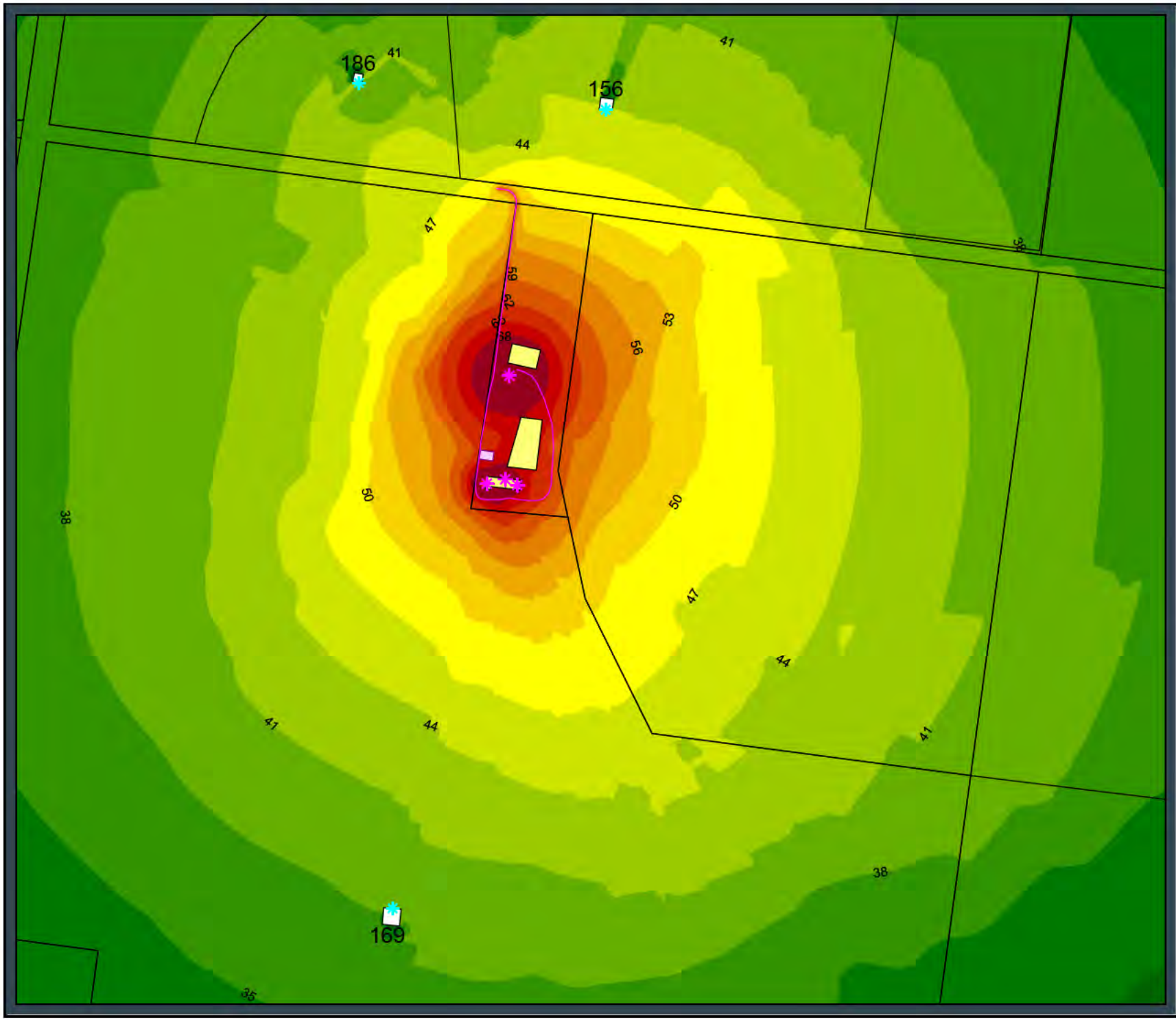
# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Existing Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dB(A) | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Flexi North-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 484.84 | -64.7 | -4.8 | -2.4 | -0.7 | 0.00 | 0.0 | 0.0 | 13.1 | | | | |
| Flexi North-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 484.84 | -64.7 | -4.8 | -2.4 | -0.7 | 0.00 | 0.0 | 0.0 | 13.1 | 0.0 | 0.0 | 0.0 | 18.1 |
| Flexi North-Noise Breakout | Area | Leq,adj,11 | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 484.84 | -64.7 | -4.8 | -2.4 | -0.7 | 0.00 | 0.0 | 0.0 | 13.1 | -1.4 | 0.0 | 0.0 | 16.7 |
| Flexi North-Noise Breakout | Area | Leq,adj,4h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 484.84 | -64.7 | -4.8 | -2.4 | -0.7 | 0.00 | 0.0 | 0.0 | 13.1 | | 0.0 | | |
| Flexi North-Noise Breakout | Area | Leq,adj,9h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 484.84 | -64.7 | -4.8 | -2.4 | -0.7 | 0.00 | 0.0 | 0.0 | 13.1 | -9.5 | 0.0 | 0.0 | 8.6 |
| Flexi South-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 488.09 | -64.8 | -4.8 | -9.4 | -0.3 | 0.00 | 0.0 | 0.0 | 6.5 | 0.0 | 0.0 | 0.0 | 11.5 |
| Flexi South-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 488.09 | -64.8 | -4.8 | -9.4 | -0.3 | 0.00 | 0.0 | 0.0 | 6.5 | | | | |
| Flexi South-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 488.09 | -64.8 | -4.8 | -9.4 | -0.3 | 0.00 | 0.0 | 0.0 | 6.5 | 0.0 | 0.0 | 0.0 | 11.5 |
| Flexi South-Noise Breakout | Area | Leq,adj,11 | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 488.09 | -64.8 | -4.8 | -9.4 | -0.3 | 0.00 | 0.0 | 0.0 | 6.5 | -1.4 | 0.0 | 0.0 | 10.1 |
| Flexi South-Noise Breakout | Area | Leq,adj,4h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 488.09 | -64.8 | -4.8 | -9.4 | -0.3 | 0.00 | 0.0 | 0.0 | 6.5 | | 0.0 | | |
| Flexi South-Noise Breakout | Area | Leq,adj,9h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 488.09 | -64.8 | -4.8 | -9.4 | -0.3 | 0.00 | 0.0 | 0.0 | 6.5 | -9.5 | 0.0 | 0.0 | 1.9 |
| Forklift North | Area | Leq,adj,1h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 369.36 | -62.3 | -1.3 | -3.7 | -1.9 | 0.00 | 0.0 | 0.0 | 22.8 | 0.0 | 0.0 | 0.0 | 27.8 |
| Forklift North | Area | Leq,adj,1h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 369.36 | -62.3 | -1.3 | -3.7 | -1.9 | 0.00 | 0.0 | 0.0 | 22.8 | | | | |
| Forklift North | Area | Leq,adj,1h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 369.36 | -62.3 | -1.3 | -3.7 | -1.9 | 0.00 | 0.0 | 0.0 | 22.8 | 0.0 | 0.0 | 0.0 | 27.8 |
| Forklift North | Area | Leq,adj,11 | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 369.36 | -62.3 | -1.3 | -3.7 | -1.9 | 0.00 | 0.0 | 0.0 | 22.8 | -1.4 | 0.0 | 0.0 | 26.4 |
| Forklift North | Area | Leq,adj,4h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 369.36 | -62.3 | -1.3 | -3.7 | -1.9 | 0.00 | 0.0 | 0.0 | 22.8 | | 0.0 | | |
| Forklift North | Area | Leq,adj,9h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 369.36 | -62.3 | -1.3 | -3.7 | -1.9 | 0.00 | 0.0 | 0.0 | 22.8 | -9.5 | 0.0 | 0.0 | 18.2 |
| Forklift South | Area | Leq,adj,1h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 460.61 | -64.3 | -2.0 | -3.7 | -2.3 | 0.00 | 0.0 | 0.0 | 19.7 | 0.0 | 0.0 | 0.0 | 24.7 |
| Forklift South | Area | Leq,adj,1h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 460.61 | -64.3 | -2.0 | -3.7 | -2.3 | 0.00 | 0.0 | 0.0 | 19.7 | | | | |
| Forklift South | Area | Leq,adj,1h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 460.61 | -64.3 | -2.0 | -3.7 | -2.3 | 0.00 | 0.0 | 0.0 | 19.7 | 0.0 | 0.0 | 0.0 | 24.7 |
| Forklift South | Area | Leq,adj,11 | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 460.61 | -64.3 | -2.0 | -3.7 | -2.3 | 0.00 | 0.0 | 0.0 | 19.7 | -1.4 | 0.0 | 0.0 | 23.3 |
| Forklift South | Area | Leq,adj,4h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 460.61 | -64.3 | -2.0 | -3.7 | -2.3 | 0.00 | 0.0 | 0.0 | 19.7 | | 0.0 | | |
| Forklift South | Area | Leq,adj,9h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 460.61 | -64.3 | -2.0 | -3.7 | -2.3 | 0.00 | 0.0 | 0.0 | 19.7 | -9.5 | 0.0 | 0.0 | 15.1 |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 486.43 | -64.7 | -1.0 | -20.0 | -1.8 | 0.00 | 0.0 | 0.0 | 12.8 | 0.0 | 0.0 | 0.0 | 17.8 |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 486.43 | -64.7 | -1.0 | -20.0 | -1.8 | 0.00 | 0.0 | 0.0 | 12.8 | | | | |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 486.43 | -64.7 | -1.0 | -20.0 | -1.8 | 0.00 | 0.0 | 0.0 | 12.8 | 0.0 | 0.0 | 0.0 | 17.8 |
| Shredder Breakout | Point | Leq,adj,11 | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 486.43 | -64.7 | -1.0 | -20.0 | -1.8 | 0.00 | 0.0 | 0.0 | 12.8 | -1.4 | 0.0 | 0.0 | 16.4 |
| Shredder Breakout | Point | Leq,adj,4h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 486.43 | -64.7 | -1.0 | -20.0 | -1.8 | 0.00 | 0.0 | 0.0 | 12.8 | | 0.0 | | |
| Shredder Breakout | Point | Leq,adj,9h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 486.43 | -64.7 | -1.0 | -20.0 | -1.8 | 0.00 | 0.0 | 0.0 | 12.8 | -9.5 | 0.0 | 0.0 | 8.2 |
| Shredder Shed-Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 486.10 | -64.7 | -4.2 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 15.6 | 0.0 | 0.0 | 0.0 | 20.6 |
| Shredder Shed-Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 486.10 | -64.7 | -4.2 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 15.6 | | | | |
| Shredder Shed-Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 486.10 | -64.7 | -4.2 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 15.6 | 0.0 | 0.0 | 0.0 | 20.6 |
| Shredder Shed-Eastern Facade | Area | Leq,adj,11 | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 486.10 | -64.7 | -4.2 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 15.6 | -1.4 | 0.0 | 0.0 | 19.2 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Existing Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dB(A) | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Shredder Shed-Eastern Facade | Area | Leq,adj,4h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 486.10 | -64.7 | -4.2 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 15.6 | | 0.0 | | |
| Shredder Shed-Eastern Facade | Area | Leq,adj,9h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 486.10 | -64.7 | -4.2 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 15.6 | -9.5 | 0.0 | 0.0 | 11.0 |
| Shredder Shed-Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 482.59 | -64.7 | -4.3 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.4 | 0.0 | 0.0 | 0.0 | 26.4 |
| Shredder Shed-Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 482.59 | -64.7 | -4.3 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.4 | | | | |
| Shredder Shed-Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 482.59 | -64.7 | -4.3 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.4 | 0.0 | 0.0 | 0.0 | 26.4 |
| Shredder Shed-Northern Facade | Area | Leq,adj,11 | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 482.59 | -64.7 | -4.3 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.4 | -1.4 | 0.0 | 0.0 | 25.0 |
| Shredder Shed-Northern Facade | Area | Leq,adj,4h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 482.59 | -64.7 | -4.3 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.4 | | 0.0 | | |
| Shredder Shed-Northern Facade | Area | Leq,adj,9h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 482.59 | -64.7 | -4.3 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.4 | -9.5 | 0.0 | 0.0 | 16.8 |
| Shredder Shed-Roof | Area | Leq,adj,1h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 485.28 | -64.7 | -3.4 | -2.0 | -0.7 | 0.00 | 0.0 | 0.0 | 21.9 | 0.0 | 0.0 | 0.0 | 26.9 |
| Shredder Shed-Roof | Area | Leq,adj,1h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 485.28 | -64.7 | -3.4 | -2.0 | -0.7 | 0.00 | 0.0 | 0.0 | 21.9 | | | | |
| Shredder Shed-Roof | Area | Leq,adj,1h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 485.28 | -64.7 | -3.4 | -2.0 | -0.7 | 0.00 | 0.0 | 0.0 | 21.9 | 0.0 | 0.0 | 0.0 | 26.9 |
| Shredder Shed-Roof | Area | Leq,adj,11 | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 485.28 | -64.7 | -3.4 | -2.0 | -0.7 | 0.00 | 0.0 | 0.0 | 21.9 | -1.4 | 0.0 | 0.0 | 25.5 |
| Shredder Shed-Roof | Area | Leq,adj,4h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 485.28 | -64.7 | -3.4 | -2.0 | -0.7 | 0.00 | 0.0 | 0.0 | 21.9 | | 0.0 | | |
| Shredder Shed-Roof | Area | Leq,adj,9h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 485.28 | -64.7 | -3.4 | -2.0 | -0.7 | 0.00 | 0.0 | 0.0 | 21.9 | -9.5 | 0.0 | 0.0 | 17.3 |
| Shredder Shed-Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 487.85 | -64.8 | -4.3 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 14.3 | 0.0 | 0.0 | 0.0 | 19.3 |
| Shredder Shed-Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 487.85 | -64.8 | -4.3 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 14.3 | | | | |
| Shredder Shed-Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 487.85 | -64.8 | -4.3 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 14.3 | 0.0 | 0.0 | 0.0 | 19.3 |
| Shredder Shed-Southern Facade | Area | Leq,adj,11 | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 487.85 | -64.8 | -4.3 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 14.3 | -1.4 | 0.0 | 0.0 | 17.9 |
| Shredder Shed-Southern Facade | Area | Leq,adj,4h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 487.85 | -64.8 | -4.3 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 14.3 | | 0.0 | | |
| Shredder Shed-Southern Facade | Area | Leq,adj,9h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 487.85 | -64.8 | -4.3 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 14.3 | -9.5 | 0.0 | 0.0 | 9.7 |
| Shredder Shed-Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 484.33 | -64.7 | -4.4 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 22.4 | 0.0 | 0.0 | 0.0 | 27.4 |
| Shredder Shed-Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 484.33 | -64.7 | -4.4 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 22.4 | | | | |
| Shredder Shed-Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 484.33 | -64.7 | -4.4 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 22.4 | 0.0 | 0.0 | 0.0 | 27.4 |
| Shredder Shed-Western Facade | Area | Leq,adj,11 | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 484.33 | -64.7 | -4.4 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 22.4 | -1.4 | 0.0 | 0.0 | 26.0 |
| Shredder Shed-Western Facade | Area | Leq,adj,4h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 484.33 | -64.7 | -4.4 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 22.4 | | 0.0 | | |
| Shredder Shed-Western Facade | Area | Leq,adj,9h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 484.33 | -64.7 | -4.4 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 22.4 | -9.5 | 0.0 | 0.0 | 17.9 |
| Truck Movements | Line | Leq,adj,1h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 350.07 | -61.9 | -2.0 | -2.5 | -1.7 | 0.00 | 0.0 | 0.0 | 17.6 | 7.8 | 0.0 | 0.0 | 25.4 |
| Truck Movements | Line | Leq,adj,1h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 350.07 | -61.9 | -2.0 | -2.5 | -1.7 | 0.00 | 0.0 | 0.0 | 17.6 | | | | |
| Truck Movements | Line | Leq,adj,1h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 350.07 | -61.9 | -2.0 | -2.5 | -1.7 | 0.00 | 0.0 | 0.0 | 17.6 | 7.8 | 0.0 | 0.0 | 25.4 |
| Truck Movements | Line | Leq,adj,11 | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 350.07 | -61.9 | -2.0 | -2.5 | -1.7 | 0.00 | 0.0 | 0.0 | 17.6 | 6.7 | 0.0 | 0.0 | 24.3 |
| Truck Movements | Line | Leq,adj,4h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 350.07 | -61.9 | -2.0 | -2.5 | -1.7 | 0.00 | 0.0 | 0.0 | 17.6 | | 0.0 | | |
| Truck Movements | Line | Leq,adj,9h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 350.07 | -61.9 | -2.0 | -2.5 | -1.7 | 0.00 | 0.0 | 0.0 | 17.6 | -1.8 | 0.0 | 0.0 | 15.8 |

# Appendix F – Noise Contour Maps




ATP250121

**Boonenne Timbers**

**Noise Levels Associated with Existing Development**

**Ground Floor (1.8m AGL)**

Operational Noise Level
$L_{eq,adj,1hr,\ Day}$ dB(A)

| | |
|---|---|
| | <= 29 |
| 29 < | <= 32 |
| 32 < | <= 35 |
| 35 < | <= 38 |
| 38 < | <= 41 |
| 41 < | <= 44 |
| 44 < | <= 47 |
| 47 < | <= 50 |
| 50 < | <= 53 |
| 53 < | <= 56 |
| 56 < | <= 59 |
| 59 < | <= 62 |
| 62 < | <= 65 |
| 65 < | <= 68 |
| 68 < | |

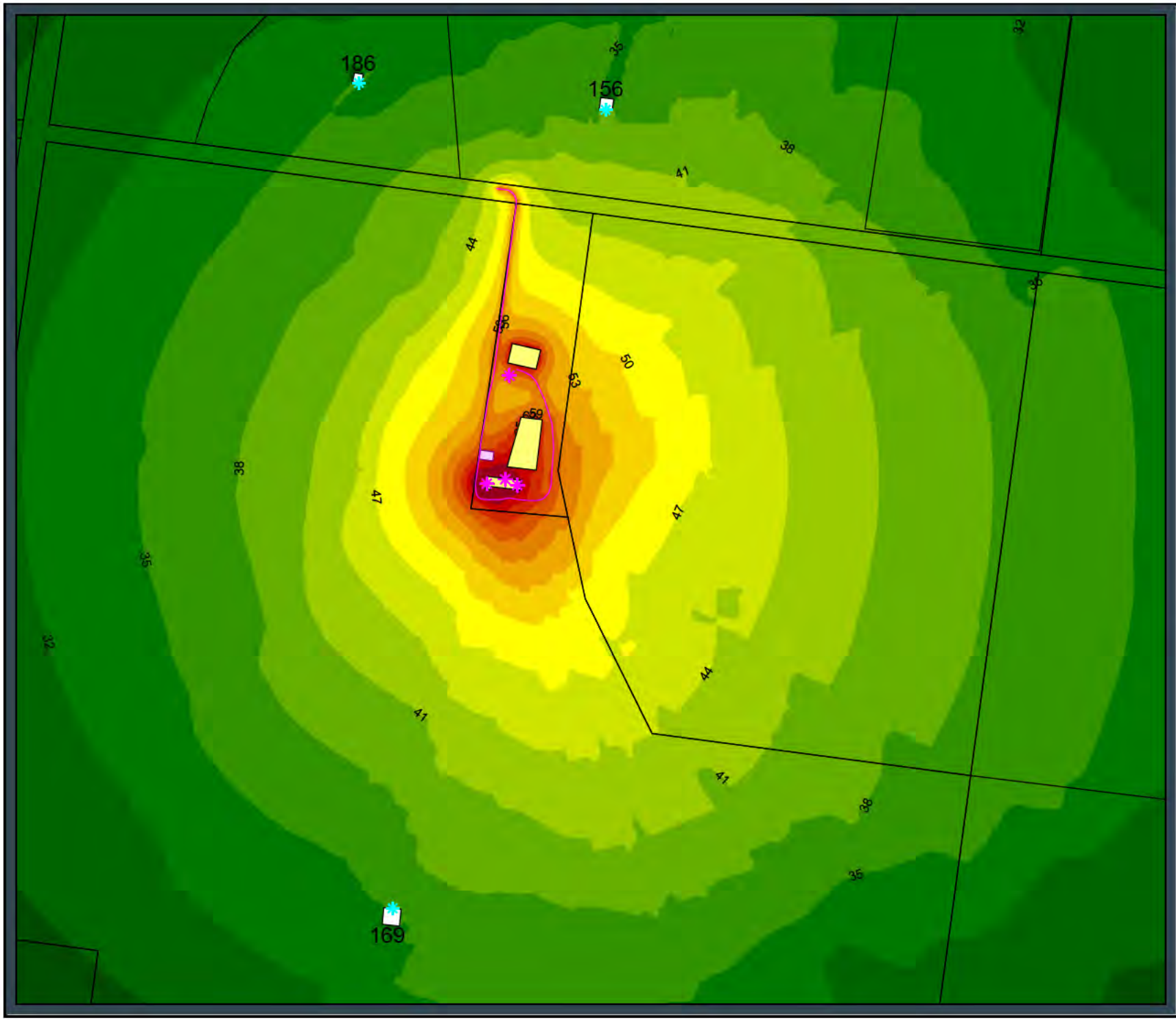
**Legend**

- Adjacent building
- Point receiver
- Noise source (point)
- Noise source (line)
- Noise source (area)
- Noise source (parking lot)
- Noise source (industrial building)
- Lot boundary

**SCALE @ A4 1:6000**

0 25 50 100 150 200 250 m

Grid Spacing: 2m
Project Engineer: Felix Gau Rinaldi
Created: 16/01/2025
Processed with SoundPLAN 9.1




ATP250121

**Boonenne Timbers**

**Noise Levels Associated with Existing Development**

**Ground Floor (1.8m AGL)**

Operational Noise Level
$L_{eq,adj,1hr,\ Night}$ dB(A)

| | |
|---|---|
| | <= 29 |
| 29 < | <= 32 |
| 32 < | <= 35 |
| 35 < | <= 38 |
| 38 < | <= 41 |
| 41 < | <= 44 |
| 44 < | <= 47 |
| 47 < | <= 50 |
| 50 < | <= 53 |
| 53 < | <= 56 |
| 56 < | <= 59 |
| 59 < | <= 62 |
| 62 < | <= 65 |
| 65 < | <= 68 |
| 68 < | |

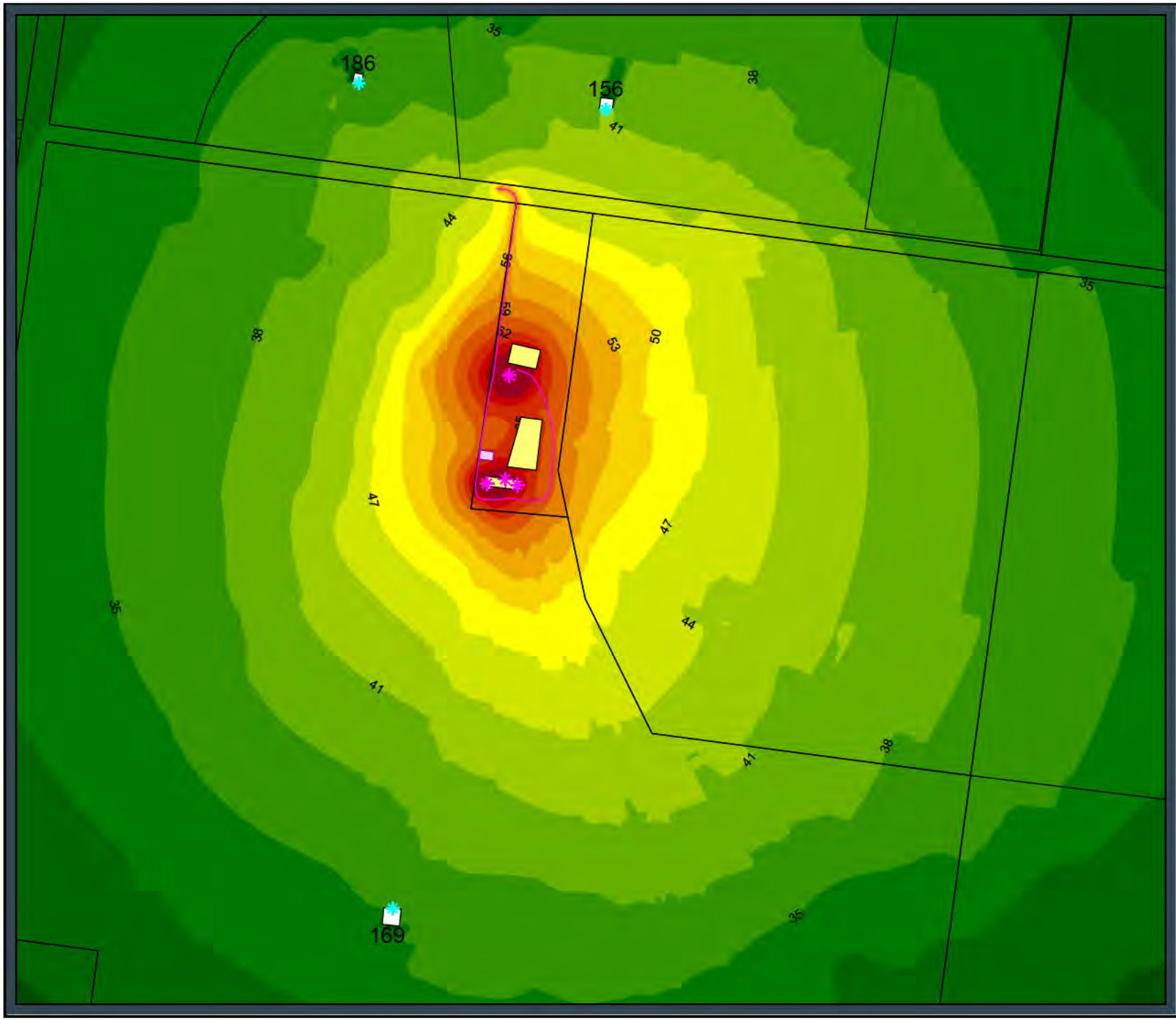
**Legend**

- Adjacent building
- Point receiver
- Noise source (point)
- Noise source (line)
- Noise source (area)
- Noise source (parking lot)
- Noise source (industrial building)
- Lot boundary

**SCALE @ A4 1:6000**

0 25 50 100 150 200 250 m

Grid Spacing: 2m
Project Engineer: Felix Gau Rinaldi
Created: 16/01/2025
Processed with SoundPLAN 9.1




ATP250121

**Boonenne Timbers**

**Noise Levels Associated with Existing Development**

**Ground Floor (1.8m AGL)**

Operational Noise Level
$L_{eq,adj,11hr,\ Day}$ dB(A)

| | |
|---|---|
| | <= 29 |
| 29 < | <= 32 |
| 32 < | <= 35 |
| 35 < | <= 38 |
| 38 < | <= 41 |
| 41 < | <= 44 |
| 44 < | <= 47 |
| 47 < | <= 50 |
| 50 < | <= 53 |
| 53 < | <= 56 |
| 56 < | <= 59 |
| 59 < | <= 62 |
| 62 < | <= 65 |
| 65 < | <= 68 |
| 68 < | |

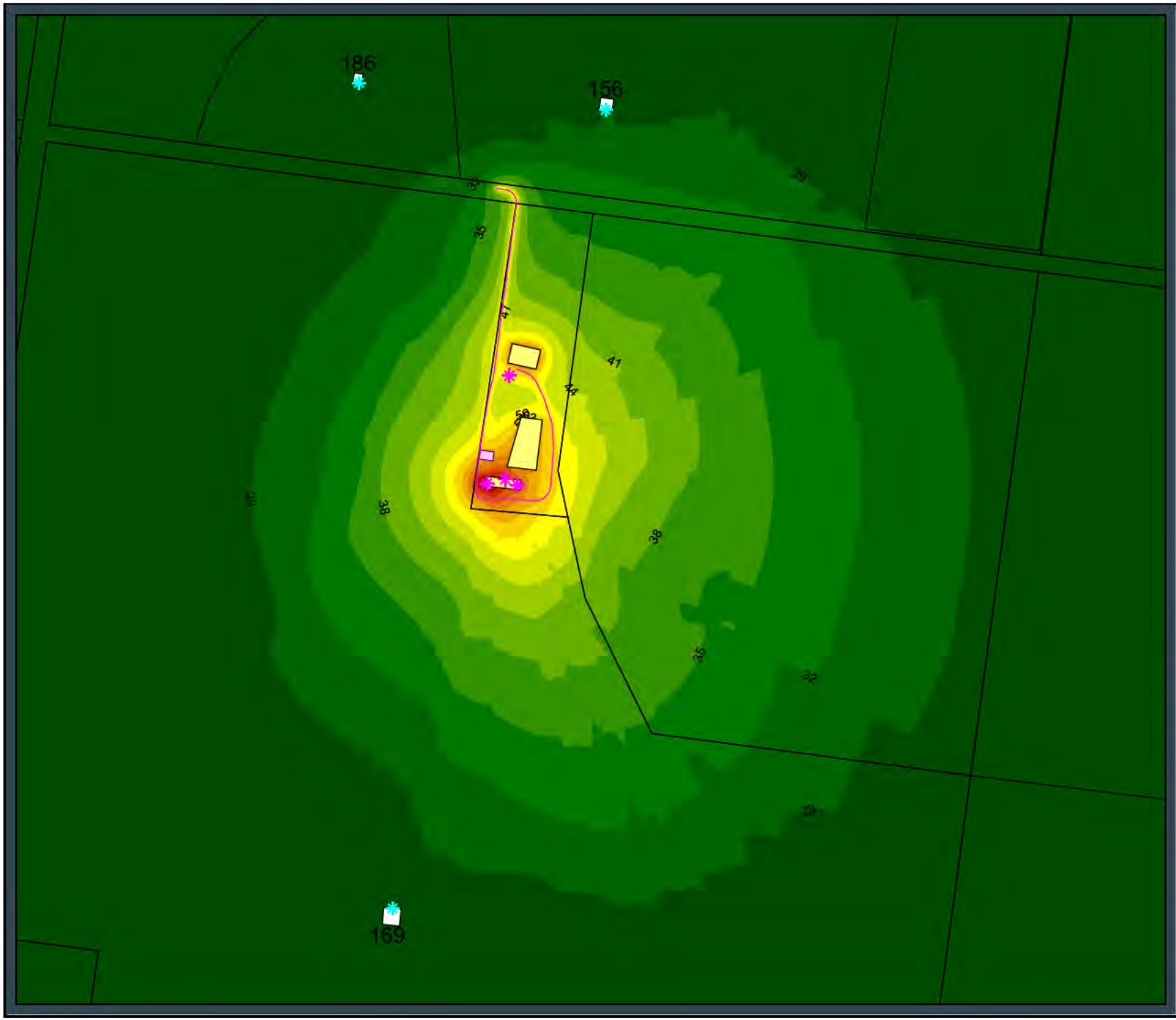
**Legend**

- Adjacent building
- Point receiver
- Noise source (point)
- Noise source (line)
- Noise source (area)
- Noise source (parking lot)
- Noise source (industrial building)
- Lot boundary

**SCALE @ A4 1:6000**

0 25 50 100 150 200 250 m

Grid Spacing: 2m
Project Engineer: Felix Gau Rinaldi
Created: 16/01/2025
Processed with SoundPLAN 9.1




ATP250121

**Boonenne Timbers**

**Noise Levels Associated with Existing Development**

**Ground Floor (1.8m AGL)**

Operational Noise Level
$L_{eq,adj,9hr,\ Night}$ dB(A)

| | |
|---|---|
| | <= 29 |
| 29 < | <= 32 |
| 32 < | <= 35 |
| 35 < | <= 38 |
| 38 < | <= 41 |
| 41 < | <= 44 |
| 44 < | <= 47 |
| 47 < | <= 50 |
| 50 < | <= 53 |
| 53 < | <= 56 |
| 56 < | <= 59 |
| 59 < | <= 62 |
| 62 < | <= 65 |
| 65 < | <= 68 |
| 68 < | |

**Legend**

- Adjacent building
- Point receiver
- Noise source (point)
- Noise source (line)
- Noise source (area)
- Noise source (parking lot)
- Noise source (industrial building)
- Lot boundary

**SCALE @ A4 1:6000**

0 25 50 100 150 200 250 m

Grid Spacing: 2m
Project Engineer: Felix Gau Rinaldi
Created: 16/01/2025
Processed with SoundPLAN 9.1

# Appendix G – Acoustic Screening (Curtains)

# Flexshield
# SONICCLEAR INDUSTRIAL PVC - STRIP CURTAINS

**Durable, reliable, and efficient barrier solutions**

SonicClear PVC strip curtains are transparent curtains that are ideal for maintaining an ambient temperature for your warehouse. They also keep out dust/flies/pests, restrict the movement of air pollutants, and control noise.

Thanks to their clever design, SonicClear PVC strip curtains efficiently keep the temperature in your production area relatively stable by allowing smaller airflow.

## Why use PVC strip curtains and doors?

**They are durable**

The versatile and durable SonicClear PVC strip curtains can withstand massive amounts of force and scrapes, and won't break easily.

**They adhere to safety standards**

SonicClear PVC Strip curtains help reduce workplace accidents by allowing employees to check pathways for potential hazards before entering.

**They are more efficient**

Staff can pass through the screens without needing to open them up completely. Even small vehicles such as forklifts won't have difficulty getting through the curtains.

**They can keep pests out**

Investing in SonicClear PVC curtains helps you prevent pest and insect infestations. The curtains are heavy enough to keep pests from entering, while still being lightweight for humans to pass through.

SonicClear Industrial PVC strip curtains for grinding bays.

SonicClear Industrial PVC strip curtains.

flex SHIELD
Health, Safety, Productivity.

Manufacturing | Construction | Resources
Utilities | Education | Defence

## SonicClear strip curtain doors

These PVC strip curtain doors allow rapid access into and out of doorways without the need to open and close a swinging door.

## SonicClear strip curtain walls

Strip curtain walls divide work processes and, depending on your application, can stretch for a very long distance.

Your SonicClear PVC strip curtains are custom-made to suit your exact size and specifications. Flexshield can supply the easy-to-install curtains in kit form with step-by-step instructions, or we will gladly install them onsite. Once installed they provide immediate results.

Flexshield also manufacture a complete SonicClear support system that will cover all your fixing and support requirements.

## NATA tested for sound insulation

SonicClear is available in 2 mm, 4 mm and 6 mm thick options, all of which are NATA tested.

Testing is per Australian Standard 1191-2002, Acoustics: Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.

The weighted sound transmission index (Rw) is determined as specified in AS/NZS ISO 717.1-2004 Acoustics – Rating of sound insulation in buildings and building elements, Part I: Airborne Sound Insulation.

Ask us for your copy of the full NATA Attenuation test results.

## What is NATA testing?

NATA – the National Association of Testing Authorities – accredits organisations to perform testing and inspection activities for their products and services. This accreditation gives you the assurance you need to make safe, healthy and reliable choices.

SonicClear Industrial PVC strip curtains.

SonicClear Industrial PVC strip curtains for weather protection.

### Wonderful product and great service

"This is just a message to congratulate Flexshield on its wonderful product and great service. You were prompt in the manufacture and delivered when you said you would. We wouldn't hesitate to use this wash bay curtain in the future, and we would be using Flexshield to supply us."

Scott Freitag
Site Supervisor | Premier Building & Construction Pty Ltd

flex SHIELD
Health, Safety, Productivity.

# RESISTANCE OF FLEXSHIELD SONICCLEAR CURTAINS TO CHEMICALS

**Key - Chemical effect ratings**

- No effect - Excellent
- Moderate effect - Fair
- Minor effect - Good
- Severe effect - Poor

**Key**

- ● Satisfactory to 72°F
- ●○ Satisfactory to 120°F

| | PVC |
|---|---|
| Hydrochloric Acid 37% | ● |
| Hydrochloric Acid 100% | ●○ |
| Hydrocyanic Acid | ● |
| Hydrocyanic Acid (Gas 10%) | |
| Hydrofluoric Acid 20% | |
| Hydrofluoric Acid 100% | |
| Hydrofluosilicic Acid 20% | ●○ |
| Hydrofluosilicic Acid 100% | ● |
| Hydrogen Gas | ●○ |
| Hydrogen Peroxide 50% | ● |
| Hydrogen Peroxide 100% | ●○ |
| Hydrogen Sulfide (aqua) | ● |
| Hydrogen Sulfide (dry) | ●○ |
| Hydroxyacetic Acid 70% | |
| Iodine | |
| Isopropyl Acetate | |
| Isopropyl Ether | |
| Jet Fuel ($JP_3$, -4, -5) | ● |
| Kerosene | ●○ |
| Ketones | |
| Lacquers | |
| Lacquer Thinners | |
| Lactic Acid | ● |
| Lard | ● |
| Lead Acetate | ●○ |
| Lead Sulfamate | ●○ |
| Lime | ● |
| Lubricants | ●○ |
| Magnesium Carbonate | ●○ |
| Magnesium Chloride | ●○ |
| Magnesium Hydroxide | ●○ |
| Magnesium Nitrate | ●○ |
| Magnesium Sulfate | ●○ |
| Maleic Acid | ●○ |
| Malic Acid | ●○ |
| Mercuric Chloride (Dilute) | ●○ |
| Mercuric Cyanide | ●○ |
| Murcury | |
| Methanol (Methyl Alcohol) | ● |
| Methyl Acetate | |
| Methyl Alcohol 10% | ● |
| Methyl Bromide | |
| Methyl Butyl Ketone | |
| Methyl Cellosolve | ●○ |
| Methyl Chloride | |
| Methyl Dichloride | |
| Methyl Ethyl Ketone | |
| Methyl Isobutyl Ketone | |
| Methylene Chloride | |
| Milk | ●○ |
| Molasses | ●○ |
| Naphtha | |
| Naphthalene | |
| Nickel Chloride | ●○ |
| Nickel Sulfate | ●○ |

| | PVC |
|---|---|
| Nitric Acid (5-10%) | ● |
| Nitric Acid (20%) | ● |
| Nitric Acid (50%) | ● |
| Nitric Acid (concentrated) | |
| Nitrobenzene | |
| Corn | |
| Cotton Seed | ●○ |
| Creosote | |
| Dieselo Fuel (20, 30, 40, 50) | ●○ |
| Fuel (1, 2, 3, 5A, 5B, 6) | ●○ |
| Linseed | ●○ |
| Mineral | ● |
| Olive | |
| Pine | |
| Rosin | |
| Silicone | |
| Soybean | ● |
| Turbine | ● |
| Oleic Acid | ●○ |
| Oleum 25% | |
| Oleum 100% | |
| Oxaalic Acid (cold) | ● |
| Paraffin | ● |
| Pentane | |
| Perchloroethylene | ● |
| Petrolatum | |
| Phenol (10%) | ● |
| Phenol (Carbolic Acid) | ● |
| Phosphoric Acid (<40%) | ●○ |
| Phosphoric Acid (>40%) | ●○ |
| Phosphoric Acid (Crude) | ●○ |
| Photographic Developer | |
| Picric Acid | |
| Potash | |
| Potassium Bicarbonate | |
| Potassium Bromide | |
| Potassium Carbonate | |
| Potassium Chlorate | |
| Potassium Chloride | |
| Potassium Chromate | |
| Potassium Cyanide Solutions | |
| Potassium Dichromate | |
| Potassium Ferrocyanide | |
| Potassium Hydroxide (caustic potash) | ● |
| Potassium Nitrate | |
| Potassium Permanganate | ● |
| Potassium Sulfate | ●○ |
| Potassium Sulfide | ●○ |
| Propane (liquified) | ● |
| Propylene Glycol | ● |
| Pyridine | |
| Pyrogallic Acid | |
| Rosins | ● |
| Sea Water | ●○ |
| Silicone | |

| | PVC |
|---|---|
| Silver Nitrate | ● |
| Soap Solutions | |
| Sodium Acetate | ● |
| Sodium Bicarbonate | ●○ |
| Sodium Bisulfate | ●○ |
| Sodium Bisulfite | ●○ |
| Sodium Borate | ●○ |
| Sodium Carbonate | ●○ |
| Sodium Chlorate | ● |
| Sodium Chloride | ●○ |
| Sodium Cyanide | ●○ |
| Sodium Fluoride | ●○ |
| Sodium Hydroxide (20%) | |
| Sodium Hydroxide (50%) | |
| Sodium Hydroxide (80%) | |
| Sodium Hypochlorite (20%) | |
| Sodium Hypochlorite (100%) | ●○ |
| Sodium Metaphosphate | ●○ |
| Sodium Metasilicate | |
| Sodium Nitrate | ●○ |
| Sodium Perborate | ●○ |
| Sodium Polyphosphate | ● |
| Sodium Silicate | ●○ |
| Sodium Sulfate | ●○ |
| Sodium Sulfide | ●○ |
| Sodium Tetraborate | ●○ |
| Sodium Thiosulfate (hypro) | ●○ |
| Stannic Chloride | ●○ |
| Stannous Chloride | ●○ |
| Sulfur Dioxide | ●○ |
| Sulfur Dioxide (Dry) | ●○ |
| Sulfur Trioxide (Dry) | ● |
| Sulfuric Acid (<10%) | ● |
| Sulfuric Acid (10-75%) | ● |
| Sulfurous Acid | ●○ |
| Tannic Acid | ● |
| Tanning Liquors | ● |
| Tartaric Acid | ● |
| Tomato Juice | |
| Urine | |
| Vinegar | ●○ |
| Water, Acid, Mine | ●○ |
| Water, Distilled | ●○ |
| Water, Fresh | ●○ |
| Water, Salt | ●○ |
| Whiskey and Wines | ●○ |
| White Liquor (Pulp Mill) | ●○ |
| Xylene | |
| Zinc Chloride | |
| Zinc Sulfate | ●○ |

*Does not include the track.

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

**Contact Flexshield to find out more**

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# REPORT ON THE DETERMINATION OF AIRBORNE SOUND TRANSMISSION LOSS IN ONE-THIRD OCTAVE BANDS AND WEIGHTED SOUND REDUCTION INDEX ($R_w$) OF A 4mm SONICCLEAR STRIP CURTAIN WITH 120mm OVERLAPS.

| | |
|---|---|
| Testing Procedure: | AS 1191-2002 |
| Testing Laboratory: | Applied Acoustics Laboratory<br>RMIT University, Applied Physics Discipline<br>Melbourne, Victoria 3000, Australia<br>NATA Accreditation Number 1421 |
| Client: | Flexshield<br>40 Sowden Street<br>Drayton, Queensland<br>Australia 4350 |
| Date of Test: | 15/03/2006 |
| Date of Report: | 28/03/2006 |
| Report Number: | 121I/06-010/PD |
| Testing Officer: | Peter Dale |

Peter Dale
Approved NATA Signatory

NATA
WORLD RECOGNISED
ACCREDITATION

# REPORT ON THE DETERMINATION OF AIRBORNE SOUND TRANSMISSION LOSS IN ONE-THIRD OCTAVE BANDS AND WEIGHTED SOUND REDUCTION INDEX ($R_w$) OF A 4mm SONICCLEAR STRIP CURTAIN WITH 120mm OVERLAPS.

## 1 INTRODUCTION

The test described in this report was carried out at the request of Flexshield. on the 15th of March 2006 to determine the airborne sound transmission loss and the weighted sound transmission index ($R_w$) of a 4mm SonicClear strip curtain with 400mm panels with 120mm overlaps.

The test has been carried out using the pair of sound transmission rooms of the Applied Physics Discipline, RMIT University. The sample under test is mounted in the vertical aperture between a reverberant source room and a reverberant receiving room.

The sound pressure level difference resulting between these two rooms when a sound source operates in the source room is used in conjunction with the surface area of the sample and the equivalent absorption area of the receiving room to determine the airborne sound transmission loss of the sample.

Testing has been carried out in accordance with Australian Standard 1191-2002, Acoustics: Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions. The weighted sound transmission index ($R_w$) has been determined as specified in AS/NZS ISO 717.1-2004 Acoustics – Rating of sound insulation in buildings and of building elements, Part I: Airborne Sound Insulation.

The measuring facilities and method have been accredited by the National Association of Testing Authorities, Australia (NATA) Accreditation No. 1421, and testing has been conducted fully in accordance with those terms of accreditation.

## 2. TEST FACILITIES

The sound transmission suite consists of a reverberant source room volume of 115.82 cubic metres and a reverberant receiving room of volume 114.73 cubic metres. Both rooms have an irregular geometry featuring a pentagonal floor plan with no two walls parallel, and with non-parallel floors and ceilings. The rooms are constructed of 305mm reinforced concrete, supported on laminated-rubber isolators, and acoustically de-coupled from one another by a 50mm closed cell polyurethane gasket.

The irregular room shape has been chosen to assist in the production of diffuse sound fields. Such diffuseness is further enhanced:

(a) In the receiving room by the inclusion of nine fixed non-rectangular panels, suspended in the room with random orientation. Six panels each have an area of 1.44 square metres and three each have an area of 1.67 square metres. The total one-sided area of these panel diffusers is 13.65 square metres, being 55.7% of that of the largest single boundary surface (the ceiling).

(b) In the source room by inclusion of nine fixed non-rectangular polyvinyl chloride panels suspended in the room with random orientation. Four panels each have an area 1.86 square metres, the other five each have an area 1.24 square metres. The total one-sided area of these panel diffusers is 13.64 square metres, being 56.5% of that of the largest single boundary surfaces (the ceiling).

The average sound absorption coefficient of the diffusers and the internal surfaces of the rooms is below 0.06 in each test frequency band.

## 3. EQUIPMENT

The equipment used in performing this test is listed below.

| | |
|---|---|
| Real Time Analyser | Bruel & Kjaer Type 2133 S/N 1570243 |
| Measuring Amplifier | Bruel & Kjaer Type 2610 S/N 1646952 |
| Microphone Rx Room | Bruel & Kjaer Type 4192 S/N 2114482 |
| Microphone Preamplifier RX Room | GRAS Type 26AK S/N 21137 |
| Microphone Power Supply RX Room | Bruel & Kjaer Type 2804 S/N 619032 |
| Microphone Tx Room | Bruel & Kjaer Type 4192 S/N 2114481 |
| Microphone Power Supply TX Room | Bruel & Kjaer Type 2804 S/N 684339 |
| Microphone Preamplifier TX Room | Bruel & Kjaer Type 2369 S/N 1748672 |
| Band-pass Filter Set | Rockland Wavetek Type 852 |
| Amplifier | Yamaha Type AX-500 S/N M53342910 |
| Speakers | Lorantz Audio |

## 4. PROCEDURES

Testing has been conducted in accordance with the methods of AS1191:2002 – Acoustics: Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.

Random noise is fed to a single loudspeaker placed in a corner of the source room. In each one-third octave band of centre frequency 100 to 5000Hz, the mean sound pressure level in each room is found by the use of a microphone connected to a Bruel & Kjaer 2133 real time analyser. Seven independent locations of the microphone are used in each room, with the signals temporally averaged for the sampling time of 128 seconds.

The equivalent absorption area of the receiving room is determined by measurement of the reverberation time in each one-third octave band, a loudspeaker is placed in one corner of the receiving room. Seven microphone positions are chosen, with eight decays obtained at each position, between 100 and 5000Hz. The microphone signal is relayed via a microphone amplifier, to a Bruel & Kjaer 2133 Real Time Analyser. The analyser is interfaced to a personal computer. A program running on the personal computer allows the determination of the reverberation time from the sound decays in accordance with AS1045:1988 - Acoustics: Measurements of Sound Absorption in a Room.

The measuring equipment has been calibrated by an external accredited calibration laboratory, and is in current calibration.

## 5 SAMPLE DESCRIPTION.

The test specimen was clear PVC curtain described as follows: 400 x 4 SonicClear panels with a 120mm overlap mounted on a 500 Series Acoustic Track.

The 500 series Acoustic Track was mounted horizontally on the upper vertical face of the test aperture on the receive room side. The curtain comprised of 400mm wide and 4mm thick panels. These panels were hung vertically from the 500 Series Acoustic Track. The panels were installed to provide a 120mm overlap with the previous panel. The panels drop was approximately 50mm longer than the aperture opening to allow sealing against the base of the aperture.

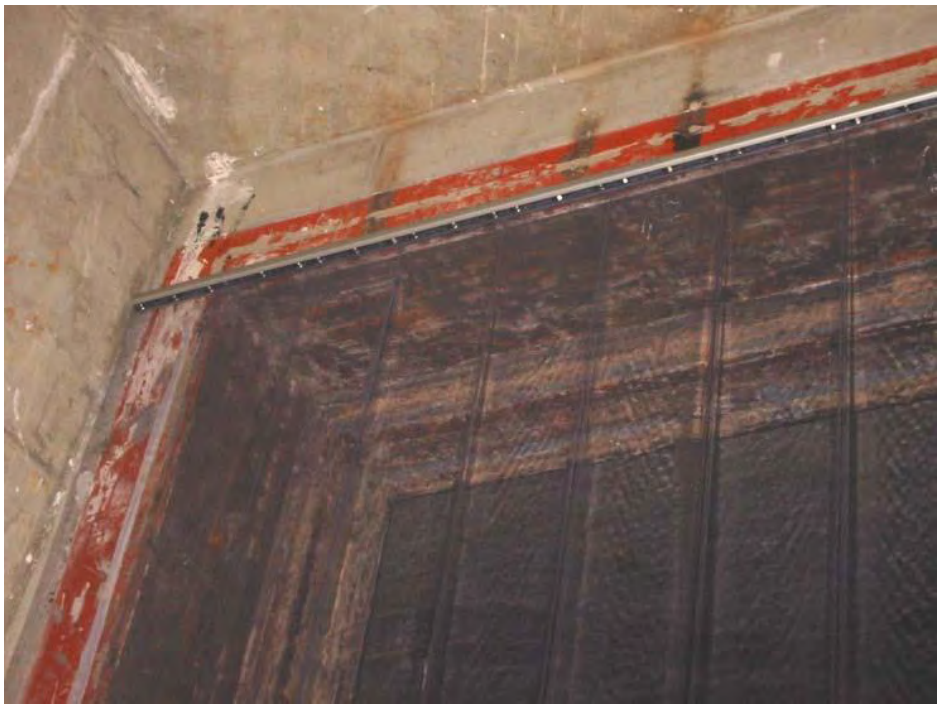
The nominal surface density of the 4mm SonicClear panels is 4.88

$kg/m^2$. Pictures 1 to 3 show curtain installation.

Picture 1: Curtain Sample mounted in test aperture.

Picture 2: View of Panel overlap.


Picture 3: Mounting of 500 Series Acoustic Track.



## 6. RESULTS

The measured airborne sound transmission loss, R dB, at each one-third octave bandwidth of centre frequencies between 100 – 5000 Hz is given in tubular form to the nearest decibel. The Weighted Sound Reduction Index ($R_w$) reference curve, in each one-third octave bandwidth of centre frequencies between 100 and 3150Hz are expressed in tabular form and are also represented graphically for the sample tested. There are no significant errors in transmission loss values due to flanking transmission, filler wall. The Weighted Sound Reduction Index of the sample is determined in accordance with AS/NZS ISO 717.1-2004.

The precision in the results is expressed as the 95% confidence interval in the determined sound transmission loss. The K value used to determine the 95% confidence interval is 2.5. This interval is estimated from the 95% confidence interval in each of the average source room level, the average receiving room level and the receiving room absorption/surface area of sample. These values are included in the table of results.

**6.1** Sample - Test Conditions

| | |
|---|---|
| Temperature: | Receive Room : $23.0^0$C.<br>Send Room : $23.0^0$C. |
| Humidity: | Receive Room : 53%.<br>Send Room : 53%. |
| Sample Surface Area: | 10.69 $m^2$ |
| Room Volumes: | Receive room : 115.74 $m^3$.<br>Source room : 121.61. $m^3$. |
| Date of test: | 15/03/2006 |

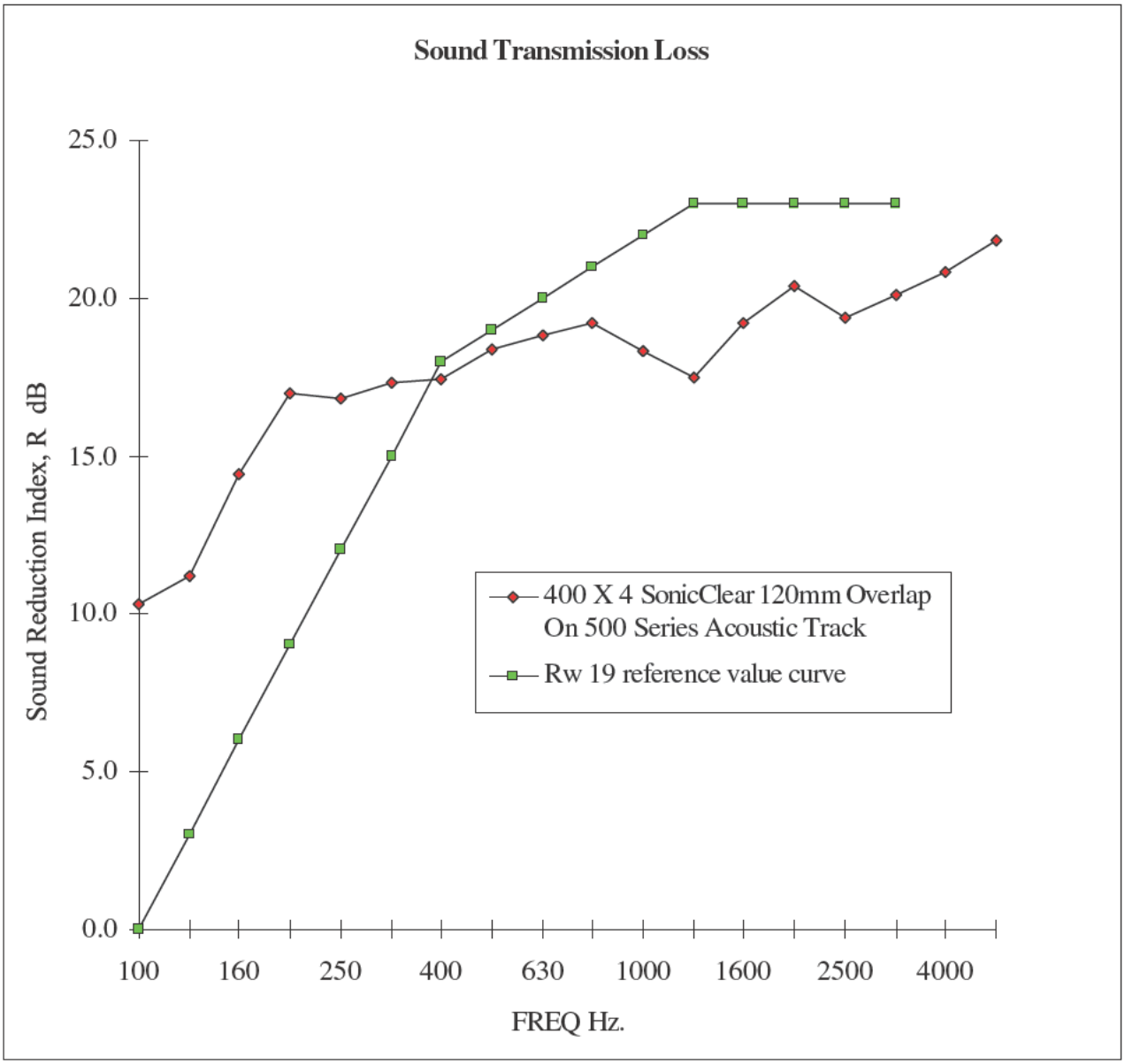
**6.2** Sound Transmission Loss Results and Weighted Sound Reduction Index $R_w$:

The Weighted Sound Reduction Index of the test curtain is: $R_w$ ($C;C_{tr}$) = 19(0;-1).
Based on laboratory measurements. Rating determined in accordance with AS/NZS ISO 717.1-2004

**Table I:** Table of results for the 400 x 4 SonicClear panels with a 120mm overlap mounted on a 500 Series Acoustic Track.

| 1/3 Octave Centre Frequency Hz | Sound Transmission Loss : R dB | $R_w$ 19 Reference Curve | 95% Confidence levels, dB. |
|---|---|---|---|
| 100 | 10.3 | 0 | 3.5 |
| 125 | 11.2 | 3 | 2.7 |
| 160 | 14.4 | 6 | 1.4 |
| 200 | 17.0 | 9 | 1.3 |
| 250 | 16.8 | 12 | 1.4 |
| 315 | 17.3 | 15 | 0.8 |
| 400 | 17.4 | 18 | 0.8 |
| 500 | 18.4 | 19 | 1.0 |
| 630 | 18.8 | 20 | 1.1 |
| 800 | 19.2 | 21 | 0.7 |
| 1000 | 18.3 | 22 | 0.6 |
| 1250 | 17.5 | 23 | 0.6 |
| 1600 | 19.2 | 23 | 0.6 |
| 2000 | 20.4 | 23 | 0.5 |
| 2500 | 19.4 | 23 | 0.5 |
| 3150 | 20.1 | 23 | 0.5 |
| 4000 | 20.8 | - | 0.5 |
| 5000 | 21.8 | - | 0.5 |

**Chart I:** Graph of results for the 400 x 4 SonicClear panels with a 120mm overlap mounted on a 500 Series Acoustic Track.



Appendix 4: Boonenne Timbers DRAFT Environmental Issues Register

## Qualitative Risk Assessment Matrix

| CONSEQUENCE (how severe will the consequence be?) | | | LIKELIHOOD (how likely is it to happen?) | | | | |
|---|---|---|---|---|---|---|---|
| | | | Once in 25 years | Once in 5-25 years | Once in 1-5 years | Once per 12 months | Once per 6 months |
| | | | **Rare** | **Unlikely** | **Possible** | **Likely** | **Almost Certain** |
| | | | E | D | C | B | A |
| Fatality or permanent severe disabilities.<br>Huge financial loss greater than $500,000<br>Production loss greater than 1 month<br>Event causing **serious environmental harm** (EP Act 1994) resulting in costs totalling more than the threshold amount (i.e. $50,000 or if a greater amount is prescribed by regulation, the greater amount) .....(maximum penalty units 6,250 or 5 years imprisonment)<br>Event causing irreversible / serious environmental harm to ecosystems including offsite. Rehabilitation costs >$200,000 | **Catastrophic / Severe** | 5 | **M** | **H** | **E** | **E** | **E** |
| Serious injury without permanent severe disability<br>Major financial loss of up to $500,000<br>Production loss 1 week to 1 month<br>Event causing **serious environmental harm** (EP Act 1994) resulting in costs totalling more than the threshold amount (i.e. $50,000 or if a greater amount is prescribed by regulation, the greater amount) .....(maximum penalty units 6,250 or 5 years imprisonment)<br>Temporary or permanent, onsite or offsite environmental harm caused. Rehabilitation costs >$50,000 but <$200,000 | **Major** | 4 | **M** | **H** | **H** | **E** | **E** |
| Recorded injury / medical treatment required<br>High financial loss of up to $50,000<br>Production loss 8 hours to 1 week<br>An event causing **material environmental harm** (EP Act 1994) resulting in costs totalling more than the threshold amount (i.e. $5,000 or if a greater amount is prescribed by regulation, the greater amount) .....(maximum penalty units 4,500 or 2 years imprisonment)<br>Uncontained but localised emission. Rehabilitation costs >$5,000 but <$50,000 | **Moderate** | 3 | **L** | **M** | **M** | **H** | **H** |
| First aid treatment only<br>Medium financial loss of up to $10,000<br>Production loss 2 hours to 8 hours<br>Offence causing **environmental nuisance** being interference with an environmental value caused by aerosols, fumes, light, noise, odour, particles or smoke, creating an unhealthy, offensive or unsightly condition ..... (maximum 1,665 penalty units in EP Act 1994)<br>An event causing localised environmental harm. Contained unintentional release onsite. Rehabilitation costs >$1,000 but <$5,000 | **Minor** | 2 | **L** | **L** | **L** | **M** | **M** |
| Insignificant injury / minor illness / first aid treatment only<br>Small financial loss up to $2,000<br>Production loss less than 2 hours<br>Contained event (spill, emission or disturbance) with negligible disturbance. Rehabilitation costs <$1,000 | **Insignificant** | 1 | **L** | **L** | **L** | **L** | **L** |

*Notes: As at 1/07/2021, a penalty unit equals $137.85 (Penalties & Sentences Amendment Regulation 2015.*

**RISK ASSESSMENT**

**STEP 1 – Consider the CONSEQUENCES**

What are the consequences of this event occurring?
Consider what could reasonably happen with existing controls in place or if an incident has occurred.
Look at the CONSEQUENCE descriptions on the Risk Matrix and choose the most suitable Consequence.

**STEP 2 – Consider the LIKELIHOOD**

What is the likelihood of the consequence identified in Step 1 happening?
Consider this without new or interim controls in place.
Look at the LIKELIHOOD descriptions on the Risk Matrix and choose the most suitable Likelihood.

**STEP 3 – Calculate the RISK**

Take the CONSEQUENCE rating and select the correct column.
Take the LIKELIHOOD rating and select the correct row.
Select RISK rating where the two ratings cross on the matrix.

**PRIORITY LEVELS FOR PLANNED CONTROLS**

Priority 1 - **Immediate** investigation of options / budget / pricing and implementation of process.
Priority 2 - Not immediate, but necessary **within 1-2 months.**
Priority 3 - **Within 2-3 months.**

| | | | | | Risk Rating | | | Controls: ACTUAL | | | Risk Rating | | | Controls: PLANNED | | | | Risk Rating | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Potential | | | | | | Actual | | | | | | | Planned | | | |
| **Activity Area** | **Mgmt Area** | **Aspect (Source of potential impact)** | **Environmental value/s (Potential Receptor)** | **Potential Pathway** | **Likelihood** | **Consequence** | **Level of Risk** | **Controls** | **Frequency** | **Responsibility** | **Likelihood** | **Consequence** | **Level of Risk** | **Controls** | **Frequency** | **Responsibility** | **Timing of implementation (refer to Priority levels on Notes tab)** | **Likelihood** | **Consequence** | **Level of Risk** | **Monitoring** |
| Site | SW | Oils and grease from vehicles, mobile plant and trucks | Health and well-being. Aesthetic environment. | Soil & water contamination | Possible | Moderate | M | Remediate spills with sawdust / spill kits for minor spills | | | Possible | Minor | L | Develop and implement site stormwater management plan | | | Priority 2 | Possible | Minor | L | |
| | | | | | | | | Regular maintenance and servicing of mobile plant | | | | | | Training and familiarisation with use of spill kits and procedure for maintenance of spill kits | | | Priority 2 | | | | |
| | | | | | | | | Induction of all mobile plant drivers. | | | | | | Implement policy that contractors ensure vehicles are maintained and serviced regularly to minimise risk of oil / grease / fuel leaks. | | | | | | | |
| | | | | | | | | Site emergency response procedure | | | | | | | | | | | | | |
| | | | | | | | | Complaints Handling | | | | | | | | | | | | | |
| Green Mill | SW | Oils and grease from Saw Mill | | Soil & water contamination | Likely | Moderate | H | Regular maintenance and vigilance | | | Possible | Minor | L | Develop and implement site stormwater management plan | | | Priority 2 | Unlikely | Minor | L | |
| | | | | | | | | Internal reporting | | | | | | All hydraulic systems to have drip trays | | | Priority 2 | | | | |
| | | | | | | | | Remediate spills with sawdust / spill kits for minor spills | | | | | | | | | | | | | |
| Log yard | SW | Suspended and dissolved solids from raw material | | Soil & water contamination | Likely | Moderate | H | Majority of ground surface comprises compacted bark, a permeable and effective sediment & erosion control in all but very heavy rains | | | Possible | Minor | L | Develop and implement site stormwater management plan | | | Priority 2 | Unlikely | Minor | L | |
| | | | | | | | | Complaints Handling | | | | | | Investigate options to redirect stormwater flow to minimise erosion, maximise silt capture | | | Priority 2 | | | | |
| Timber processing | SW | Suspended and dissolved solids from timber processing | | Soil & water contamination | Likely | Moderate | H | Sawdust hoppers are emptied daily by contractor, with sawdust removed from site for reuse in landscaping / animal husbandry industries. | | | Possible | Minor | L | Develop and implement site stormwater management plan | | | Priority 2 | Unlikely | Insignificant | L | |
| | | | | | | | | Bark is stockpiled before being collected daily by contractor, with bark removed from site for reuse in landscaping / animal husbandry industries. | | | | | | Written procedures for checking and maintenance of dust extraction and collection systems. Written procedure for "housekeeping" to remove incidental wood by-product from floors. | | | Priority 3 | | | | |
| | | | | | | | | Dust collection units fitted | | | | | | Procedure for regular checking and maintenance of dust extraction units | | | Priority 2 | | | | |
| | | | | | | | | Site procedure to minimise stockpiles of by-products on Site | | | | | | | | | Priority 3 | | | | |
| | | | | | | | | Regular maintenance and vigilance | | | | | | | | | Priority 2 | Unlikely | Minor | L | |
| | | | | | | | | Complaints Handling | | | | | | | | | | | | | |
| Site | SW | Hazardous goods storage (oils and greases) | | Soil & water contamination | Likely | Moderate | H | Minor chemical storages in hazardous goods storage. | | | Possible | Minor | L | Develop and implement site stormwater management plan | | | Priority 2 | Rare | Insignificant | L | |
| | | | | | | | | Mobile plant maintenance / repair by mobile mechanic or at offsite mechanical service centre. | | | | | | Audit hazardous goods storages and implement appropriate secondary containment (bunding) where necessary | | | Priority 2 | | | | |
| | | | | | | | | Remediate spills with sawdust / spill kits for minor spills | | | | | | All hydraulic systems have drip tray bunds. | | | Priority 2 | | | | |
| | | | | | | | | Regular maintenance and vigilance | | | | | | | | | Priority 2 | Rare | Minor | L | |
| | | | | | | | | Site emergency response | | | | | | | | | | | | | |
| | | | | | | | | Complaints Handling | | | | | | | | | | | | | |
| Site | SW | Fully bunded diesel storage | | Soil & water contamination | Likely | Moderate | H | Refuelling mobile plant always supervised. | | | Unlikely | Minor | L | Develop written procedure for onsite fuel storage dispensing. | | | Priority 2 | Unlikely | Minor | L | |
| | | | | | | | | Remediate spills with sawdust / spill kits for minor spills | | | | | | | | | | | | | |

| | | | | | Risk Rating | | | Controls: ACTUAL | | | Risk Rating | | | Controls: PLANNED | | | | Risk Rating | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Potential | | | | | | Actual | | | | | | | Planned | | | |
| **Activity Area** | **Mgmt Area** | **Aspect (Source of potential impact)** | **Environmental value/s (Potential Receptor)** | **Potential Pathway** | **Likelihood** | **Consequence** | **Level of Risk** | **Controls** | **Frequency** | **Responsibility** | **Likelihood** | **Consequence** | **Level of Risk** | **Controls** | **Frequency** | **Responsibility** | **Timing of implementation (refer to Priority levels on Notes tab)** | **Likelihood** | **Consequence** | **Level of Risk** | **Monitoring** |
| Site | SW | Superseded and decommissioned machinery | | Soil & water contamination | Likely | Moderate | H | Store redundant equipment safely for the shortest time possible, then sell for reuse or to scrap metal merchant | | | Unlikely | Minor | L | | | | | Unlikely | Minor | L | |
| Site | SW | Dirt, mud and wood by-product from trucks dropped onto nearby roads | | Soil & water contamination | Likely | Moderate | H | Truck drivers to check and clean-down running boards and wheel rims to remove loose materials, check load is covered securely | | | Unlikely | Minor | L | Develop written procedure directed to truck drivers for requirement to check and clean-down running boards and wheel rims to remove loose material and to cover load, before leaving site | | | Priority 2 | Rare | Insignificant | L | |
| | | | | | | | | Regular maintenance, vigilance and repair | | | | | | | | | | | | | |
| | | | | | | | | Internal reporting | | | | | | | | | | | | | |
| | | | | | | | | Complaints Handling | | | | | | | | | | | | | |
| Site | SW | Offsite Upstream contaminants migrating onto site | | Soil & water contamination | Likely | Moderate | H | Sawdust / bark bunds to redirect surface water flows around site | | | Unlikely | Moderate | M | Develop emergency management plan | | | Priority 2 | Unlikely | Minor | L | |
| | | | | | | | | Regular maintenance and vigilance | | | | | | | | | | | | | |
| | | | | | | | | Internal reporting | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |

| | | | | Risk Rating | | | Controls: ACTUAL | | | Risk Rating | | | Controls: PLANNED | | | Risk Rating | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Potential | | | | | | Actual | | | | | | Planned | | | |
| Mgmt Area | Aspect (Source of potential impact) | Environmental value/s (Potential Receptor) | Potential Pathway | Likelihood | Consequence | Level of Risk | Controls | Frequency | Responsibility | Likelihood | Consequence | Level of Risk | Controls | Frequency | Responsibility | Timing of implementation (refer to Priority levels on Notes tab) | Likelihood | Consequence | Level of Risk | Monitoring |
| A | Dust emissions from processing logs | Health and well-being.<br><br>Protection of the aesthetic environment. | Nuisance factor: Neighbour complaints Worker complaints | Likely | Moderate | H | Sawdust and shavings transported via pneumatic blowers | | | Likely | Minor | M | Develop written procedure for regular checks and maintenance of equipment | | | Priority 3 | Rare | Insignificant | L | |
| | | | | | | | Operation and regular maintenance of equipment as per manufacturer and supplier specifications.<br>Surveillance: Operator training and awareness | | | | | | | | | | | | | |
| | | | | | | | Equipment that is likely to generate sawdust from the process is guarded as far as practicable.<br>Surveillance: Operator training and awareness | | | | | | | | | | | | | |
| A | Dust from neighbouring agricultural operations and smoke from neighbouring sawmill | | Worker complaints.<br>Worker health and wellbeing.<br>Protection of equipment | Likely | Moderate | H | Temporary Mill shutdown during extremely dry windy conditions | | | Likely | Minor | M | Develop written procedure for monitoring weather conditions to inform likely Mill shutdown due to offsite generated dust (storms, windy conditions) and smoke. | | | Priority 3 | Rare | Insignificant | L | |
| A | Complaints regarding dust | Health and well-being.<br>Protection of the aesthetic environment. | Impact to dust sensitive place | Likely | Major | E | Procedures for dust control (watering and Mill shutdown during extreme conditions).<br>Surveillance: Operator training and awareness. | | | Likely | Minor | M | Review procedure for complaints handling and corrective actions.<br>Develop written procedure. | | | Priority 2 | Unlikely | Minor | L | |
| A | Dust generation by onsite vehicle movement | | Nuisance factor: Neighbour complaints | Likely | Moderate | H | Regular maintenance of trafficable area surfaces.<br>Watering trafficable area surfaces during dry windy conditions. | | | Rare | Insignificant | L | Develop written procedure directed to truck drivers for requirement to check and clean-down running boards and wheel rims before leaving site | | | Priority 2 | Rare | Insignificant | L | |
| | | | | | | | Surveillance: Operator training and awareness<br>Onsite speed limits for all vehicles | | | Rare | Insignificant | L | Enforce onsite speed limits for all vehicles. | | | Priority 2 | Rare | Insignificant | L | |
| A | Exhaust emissions from mobile plant | Health and well-being.<br><br>Protection of the aesthetic environment. | Nuisance factor: Neighbour complaints | Likely | Moderate | H | Design: All vehicles comply with Australian emission requirements at time of purchase | | | Rare | Insignificant | L | | | | | | | | |
| | | | | | | | Operation and regular maintenance as per manufacturer and supplier specifications<br>Surveillance: Operator training and awareness | | | Rare | Insignificant | L | | | | | | | | |
| A | Dust emissions from log and timber storages | Health and well-being.<br><br>Protection of the aesthetic environment. | Nuisance factor: Neighbour complaints | Likely | Moderate | H | Watering stockpiles to reduce dust generation on windy days.<br><br>Surveillance: Operator training and awareness | | | Rare | Insignificant | L | Implement program for planting of dense dust trapping vegetation (eg *Casuarina spp* and *Allocasuarina spp* ) along eboundaries of site. | | | Priority 2 | Rare | Insignificant | L | |
| | | | | | | | Maintenance of planted vegetation screens along site boundaries.<br>Surveillance: Operators training and awareness | | | Rare | Insignificant | L | Maintenance of planted dust trapping vegetation screens. | | | Priority 2 | Rare | Insignificant | L | |
| A | Dust emissions from by-product storage | | Nuisance factor: Neighbour complaints Worker complaints | Likely | Moderate | H | Minimise by-product stockpiles. Low-profile stockpiles generate less dust. Daily removal of by-product by contractor. | | | Possible | Minor | L | Ongoing application of waste heirarchy to waste and resource management | | | Priority 2 | Unlikely | Minor | L | |
| | | | | | | | Sawdust and shavings collected daily direct from hoppers by contractor | | | Rare | Insignificant | L | | | | | | | | |

| | | | | Risk Rating | | | Controls: ACTUAL | | | Risk Rating | | | Controls: PLANNED | | | | Risk Rating | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Potential | | | | | | Actual | | | | | | | Planned | | | |
| Mgmt Area | Aspect (Source of potential impact) | Environmental value/s (Potential Receptor) | Potential Pathway | Likelihood | Consequence | Level of Risk | Controls | Frequency | Responsibility | Likelihood | Consequence | Level of Risk | Controls | Frequency | Responsibility | Timing of implementation (refer to Priority levels on Notes tab) | Likelihood | Consequence | Level of Risk | Monitoring |
| | | | | | | | Watering stockpiles to reduce dust generation on windy days.<br>Surveillance: Operator training and awareness | | | Possible | Minor | L | | | | | | | | |

| | | | | | Risk Rating | | | Controls: ACTUAL | | | Risk Rating | | | Controls: PLANNED | | | | Risk Rating | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Potential | | | | | | Actual | | | | | | Planned | | | | |
| **Activity Area** | **Mgmt Area** | **Aspect/s** | **Environmental value/s** | **Potential Impact** | **Likelihood** | **Consequence** | **Level of Risk** | **Controls** | **Frequency** | **Responsibility** | **Likelihood** | **Consequence** | **Level of Risk** | **Controls** | **Frequency** | **Responsibility** | **Timing of implementation** (refer to Priority levels on Notes tab) | **Likelihood** | **Consequence** | **Level of Risk** | **Monitoring** |
| Log Yard | BP | Bark and log residues generated as **by-product** from Log Yard operations | | Material stored on-site.<br>Storage of large amounts of by-products leads to fire risk | Almost certain | Major | E | Bark and sawdust is removed from site daily and onsold to the landscaping / animal husbandry industries for **reuse / recycling**. | | | Almost certain | Moderate | H | Ongoing application of waste heirarchy to waste and resource management | | | Priority 3 | Unlikely | Insignificant | L | |
| | | | | | | | | Timber optimisation when docking; good operating practices to **reduce** waste generation and disposal.<br><br>Surveillance: Operator training and awareness | | | | | | Ongoing application of waste heirarchy to waste and resource management | | | Priority 3 | Unlikely | Minor | L | |
| | | | | | | | | Rotation of timber to limit reduction of timber quality (mould, rotting, etc) | | | | | | | | | | | | | |
| | | | | | | | | Timber recovery processes | | | | | | | | | | | | | |
| Green Mill | BP | Sawdust and shavings generated as by-product from Green Mill and Dry Mill operations | | Material stored on-site | Almost certain | Moderate | H | Sawdust and shavings removed from site daily and onsold to the landscaping / animal husbandry industries for **reuse / recycling.** | | | Unlikely | Minor | L | Ongoing application of waste heirarchy to waste and resource management | | | | | | | |
| Site | BP | Generation of empty chemical containers from site operations | | Disposal to landfill<br>Associated disposal costs | Almost certain | Moderate | H | Empty chemical containers disposed into appropriate waste containers (DrumMuster) at local waste management facility.<br>Surveillance: Operator training and | | | Unlikely | Minor | L | | | | Priority 2 | Unlikely | Minor | L | |
| | | | | | | | | Empty chemical containers returned to product supplier/s where possible. | | | | | | | | | | | | | |
| Site | W | Generation of general waste (paper, plastic, food scraps, bottles) | | Disposal to local waste management facility<br>Associated disposal costs | Almost certain | Minor | M | Separate bins for waste and recyclables | | | Likely | Minor | M | Develop procedure to minimise generation of general waste | | | Priority 3 | Rare | Minor | L | |
| | | | | | | | | **Recycled** through council recycling program | | | | | | | | | | | | | |
| | | | | | | | | Cans collected separately for **recycling** | | | | | | | | | | | | | |
| Site | W | Generation of waste (strapping, plastic, cardboard, etc) from site operations | | Disposal to local waste management facility<br>Associated disposal costs | Almost certain | Moderate | H | Sorting and segregation of waste to appropriate recycling containers (steel, plastic, cardboard) at local waste management facility.<br>Surveillance: Operator training and awareness | | | Likely | Minor | M | Develop procedure and implement training of workers to encourage sorting and recycling of wastes | | | Priority 3 | Unlikely | Minor | L | |
| Site | W | Superseded and decommissioned machinery | | Redundent equipment stockpiled on site | Almost certain | Moderate | H | Limit storage of redundant equipment on site | | | Possible | Minor | L | Develop and implement procedure for ANNUAL removal of redundant equipment | | | Priority 3 | Unlikely | Minor | L | |
| | | | | | | | | Machinery sold as is or sold to scrap metal merchant | | | | | | | | | | | | | |
| Site | W | Energy Usage | | Wastage of Electricity | Likely | Moderate | H | Consideration of best practice design eg utilising variable speed drives and power factor correction equipment | | | Unlikely | Insignificant | L | | | | | | | | |
| | | | | | | | | Lighting designed for fitness for application, zoning and energy efficency | | | | | | | | | | | | | |
| | | | | | | | | Regular maintenance and vigilence | | | | | | | | | | | | | |
| | | | | | | | | Surveillance: Operator training and awareness | | | | | | | | | | | | | |
| | | | | | | | | Ongoing energy review by management | | | | | | | | | | | | | |
| Site | W | Water Usage | | Wastage of Water | Likely | Moderate | H | Water usage is manually controlled in process to minimise wastage | | | Likely | Minor | M | | | | | | | | |

| | | | | | Risk Rating | | | Controls: ACTUAL | | | Risk Rating | | | Controls: PLANNED | | | | Risk Rating | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Potential | | | | | | Actual | | | | | | | Planned | | | |
| Activity Area | Mgmt Area | Aspect/s | Environmental value/s | Potential Impact | Likelihood | Consequence | Level of Risk | Controls | Frequency | Responsibility | Likelihood | Consequence | Level of Risk | Controls | Frequency | Responsibility | Timing of implementation (refer to Priority levels on Notes tab) | Likelihood | Consequence | Level of Risk | Monitoring |
| | | | | | | | | Surveillance: Operator training and awareness | | | | | | | | | | | | | |
| | | | | | | | | Regular maintenance and vigilence | | | | | | | | | | | | | |

| | | | | Risk Rating | | | Controls: ACTUAL | | | Risk Rating | | | Controls: PLANNED | | | | Risk Rating | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Potential | | | | | | Actual | | | | | | | Planned | | | |
| **Activity Area** | **Mgmt Area** | **Aspect** | **Potential Impact** | **Likelihood** | **Consequence** | **Level of Risk** | **Controls** | **Frequency** | **Responsibility** | **Likelihood** | **Consequence** | **Level of Risk** | **Controls** | **Frequency** | **Responsibility** | **Timing of implementation** (refer to Priority levels on Notes tab) | **Likelihood** | **Consequence** | **Level of Risk** | **Monitoring** |
| Off Site | N | Noise generated by trucks on approaches to site | Nuisance factor: Neighbour complaints | Likely | Major | E | Limit use of truck exhaust brakes and training truck drivers to limit use of exhaust breaks on approaches to site | | | Likely | Insignificant | L | Site policy, notification to all suppliers and haulage contractors, induction and training of truck drivers. Annual re-induction of all personnel and contractors. | | | Priority 3 | Unlikely | Insignificant | L | |
| | | | | | | | | | | | | | Develop site Traffic Management Policy | | | Priority 3 | | | | |
| Site | N | Noise generated by loaders on site | Nuisance factor: Neighbour complaints | Possible | Minor | L | Regular maintenance of equipment | | | Rare | Insignificant | L | | | | | | | #N/A | |
| | | | | | | | Regular maintenance of onsite roads | | | | | | | | | | | | | |
| | | | | | | | Complaints handling, incident reporting and corrective action procedures | | | | | | | | | | | | | |
| Site | N | Noise generated by mobile plant operation on site | Nuisance factor: Neighbour complaints | Almost Certain | Major | E | Regular maintenance of onsite roads | | | Unlikely | Insignificant | L | | | | | | | #N/A | |
| | | | | | | | White noise reversing beepers fitted to mobile plant | | | | | | | | | | | | | |
| | | | | | | | Complaints handling, incident reporting and corrective action procedures | | | | | | | | | | | | | |
| | | | | | | | Vigilence and regular maintenance | | | | | | | | | | | | | |
| Plant and Machinery | N | Noise generated by green milling operation | Nuisance factor: Neighbour complaints | Almost Certain | Major | E | Plant and enclosure design | | | Possible | Insignificant | L | | | | | | | #N/A | |
| | | | | | | | Vigilence and regular maintenance | | | | | | | | | | | | | |
| Timber processing | N | Noise generated by chipper and dust extraction | Nuisance factor: Neighbour complaints | Almost Certain | Major | E | Bunker / hopper design with insulation and noise curtains used for chip by-products. | | | Possible | Insignificant | L | | | | | | | #N/A | |
| | | | | | | | Complaints handling, incident reporting and corrective action procedures | | | | | | | | | | | | | |
| Green Mill | N | Noise generated by log infeed | Nuisance factor: Neighbour complaints | Almost Certain | Major | E | Vigilence and regular maintenance for noise attenuation equipment | | | Rare | Minor | L | Consider engagement of noise attenuation expert and implementation of procedures. | | | Priority 3 | Rare | Insignificant | L | |
| | | | | | | | Complaints handling, incident reporting and corrective action procedures | | | | | | | | | | | | | |
| Site | N | Noise generated by use of chainsaws | Impact to health of on- and off-site persons | Likely | Major | E | Complaints handling, incident reporting and corrective action procedures. No chainsaw use before 7 am on work days | | | Rare | Minor | L | Review procedure for complaints handling and corrective actions. Develop & implement written procedure. | | | Priority 2 | Rare | Insignificant | L | |
| Site | N | Noise complaints | Impact to health of on- and off-site persons | Likely | Major | E | Complaints handling, incident reporting and corrective action procedures | | | Rare | Minor | L | Review procedure for complaints handling and corrective actions. Develop & implement written procedure. | | | Priority 2 | Rare | Insignificant | L | |

| | | | | | Risk Rating | | | Controls: ACTUAL | | | Risk Rating | | | Controls: PLANNED | | | | Risk Rating | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Potential | | | | | | Actual | | | | | | | Planned | | | |
| **Activity Area** | **Mgmt Area** | **Aspect/s** | **Environmental value/s** | **Potential Impact** | **Likelihood** | **Consequence** | **Level of Risk** | **Controls** | **Frequency** | **Responsibility** | **Likelihood** | **Consequence** | **Level of Risk** | **Controls** | **Frequency** | **Responsibility** | **Timing of implementation (refer to Priority levels on Notes tab)** | **Likelihood** | **Consequence** | **Level of Risk** | **Monitoring** |
| Site | L&V | Landscaping | Aesthetic environment | Visual amenity and maintenance of on-site vegetation | Possible | Moderate | M | Revegetate selected portions of the site with local native species and grasses with low fire risk. | | | Rare | Insignificant | L | Implement program for planting dust trapping vegetation eg *Casuarina spp* and *Allocasuarina spp* endemic to Boonenne area along all boundaries of the site | | | Priority 3 | Unlikely | Insignificant | L | |
| | | | | | | | | Regular landscaping maintenance | | | | | | | | | | | | | |
| Site | L&V | Noxious and declared weeds | | Establishment of noxious and declared weeds and their spread outside site | Likely | Moderate | H | Regular weed control | | | Unlikely | Minor | L | Implement procedure for regular check for established weeds on-site and actions to control same. | | | Priority 3 | Unlikely | Minor | L | |
| | | | | | | | | Complaints handling, incident reporting and corrective action procedures | | | | | | | | | | | | | |
| Site | L&V | Landscaping | | Fire hazard | Possible | Major | H | Maintain fire break distances between vegetation and combustible materials | | | Unlikely | Moderate | M | Consider Sprinkler system for landscaped areas to double as fire control | | | Priority 3 | Unlikely | Moderate | M | |
| | | | | | | | | Regular maintenance of fire safety system (fire extinguishers, sprinkler system, fire hose reels) | | | | | | Utilise fire retardent plant species in landscaping works where practicable | | | Priority 3 | | | | |
| | | | | | | | | External audits of fire safety system | | | | | | | | | | | | | |

| | | | | Risk Rating | | | Controls: ACTUAL | | | Risk Rating | | | Controls: PLANNED | | | | Risk Rating | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Potential | | | | | | Actual | | | | | | | Planned | | | |
| **Activity Area** | **Mgmt Area** | **Aspect** | **Potential Impact** | **Likelihood** | **Consequence** | **Level of Risk** | **Controls** | **Frequency** | **Responsibility** | **Likelihood** | **Consequence** | **Level of Risk** | **Controls** | **Frequency** | **Responsibility** | **Timing of implementation (refer to Priority levels on Notes tab)** | **Likelihood** | **Consequence** | **Level of Risk** | **Monitoring** |
| Off Site | T | Traffic & transport | Impact on road network | Possible | Minor | L | Complaints handling, incident reporting and corrective action procedures | | | Unlikely | Minor | L | Review and update procedures | | | Priority 3 | Unlikely | Minor | L | |
| | | | | | | | Site procedure, notification to all suppliers and haulage contractors. | | | | | | | | | | | | | |
| Off Site | T | Traffic & transport | Loose material on road network | Likely | Major | E | Complaints handling, incident reporting and corrective action procedures | | | Unlikely | Minor | L | Prepare procedure directed to truck drivers for requirement to check and clean-down running boards and wheel rims to remove loose material and to cover load, before leaving site | | | Priority 2 | Unlikely | Minor | L | |
| | | | | | | | Truck drivers required to check and clean-down running boards and wheel rims to remove loose material and to cover load before leaving site | | | | | | | | | | | | | |
| | | | | | | | All loads of timber must be properly secured | | | | | | Process and procedures, chain of responsibility | | | | | | | |
| | | | | | | | Lost load insurance in place | | | | | | | | | | | | | |

**Appendix 5**: State Assessment and Referral Agency (SARA) *Information Request* (IR) notice (6 February 2024). Response to SARA IR (IMEMS May 2024). PSA Consulting *Traffic Engineering Response* December 2024.

Queensland Government

SARA reference: 2401-38585 SRA
Applicant reference: 11574K
Council reference: MCU23/0034

6 February 2024

IMEMS Pty Ltd
c/- ONF Surveyors
PO Box 896
KINGAROY QLD 4610
admin@onfsurveyors.com.au

Dear Sir/Madam

# SARA Information Request—157 Boonenne Road, Goodger

(Given under section 12 of the Development Assessment Rules)

This notice has been issued because the State Assessment and Referral Agency (SARA) has identified that information necessary to assess your application against State code 6: Protection of state transport networks (State code 6) and State code 22: Environmentally relevant activities (State code 22) of the State Development Assessment Provisions (SDAP) has not been provided.

| **Air Impacts** | |
|---|---|
| 1. | **Issue:**<br>Insufficient information has been provided for SARA to determine how the proposed development complies with Performance Outcome (PO) 2 of State code 22 of SDAP and the Environmental Protection (Air) Policy 2019. In particular, the proposed development is located within 500 metres of sensitive receptors (to the North, North-West and South) and air modelling has not been provided to demonstrate how the proposed development manages Particulate Matter (PM) 2.5 and PM10.<br><br>**Action:**<br>Provide air modelling which includes:<br>• Identification of any point source emissions (e.g. generators, cyclones and vents) on the development site with the following detail:<br>o a table that identifies each point source, its height, minimum efflux velocity and the contaminants proposed to be monitored<br>o the concentration (minimum, average, maximum) of the contaminants provided for each release point (i.e. mg/Nm3) as well as the relevant percentage correction for oxygen (where applicable). |



Wide Bay Burnett regional office
Level 1, 7 Takalvan Street, Bundaberg
PO Box 979, Bundaberg QLD 4670

| | |
|---|---|
| | • Assessment of whether the proposed development can comply with the air quality objectives within the Environmental Protection (Air) Policy 2019 at all sensitive receptors (commercial and residential).<br>• Demonstration that the proposed development can comply with the Common Conditions – Prescribed Environmentally Relevant Activities (ESR/2015/1828). In particular, PCA003 for PM2.5 and PM10 emission limits. |
| **Stormwater Impacts** | |
| 2. | **Issue:**<br>Insufficient information has been provided for SARA to determine how the proposed development complies with PO4 of State code 22 of SDAP and the Environmental Protection (Water and Wetland Biodiversity) Policy 2019. In particular, how stormwater from the proposed development will be managed.<br><br>**Action:**<br>Provide the following stormwater management information:<br>• Identification of potential and expected sources of stormwater contaminants (e.g. sawdust, chemicals used on the site.<br>• How stockpiles will be managed to avoid stormwater contamination.<br>• Confirmation that stormwater treatment and retention measures have capacity to retain stormwater runoff from disturbed areas generated by a rainfall event up to and including a 24 hour rainfall event with an Annual Exceedance Probability (AEP) of 10%. Evidence to demonstrate this mist include relevant engineering drawings, diagrams or documentation, prepared by a suitably qualified person.<br>• A map with GPS co-ordinates (Latitude and Longitude) in GDA2020 that identifies all discharge locations from the stormwater basin.<br>• Details of the treatment method used to treat the captured stormwater contaminated by the proposed development.<br>• Details of the expected water quality of treated water.<br>• The proposed monitoring frequency and targeted water quality parameters.<br>• Water quality limits that are suitably justified to protect the existing environmental values of receiving land using the template in **Attachment 1**. |
| **Traffic Impacts** | |
| 3. | **Issue:**<br>Insufficient information has been provided for SARA to determine how the proposed development complies with PO1, PO3 and PO6 of State code 6 of SDAP.<br><br>**Action:**<br>Provide a Traffic Impact Assessment, prepared in accordance with the Department of Transport and Main Roads' *Guide to Traffic Impact Assessment (GTIA)*, that includes:<br>• The number, type, and frequency of vehicles that service the existing use on the development site.<br>• The number, type and frequency of new vehicles that will be generated by the proposed development, including:<br>o the number and type of loaded (sawn log) vehicles entering the site/day |

| | |
|---|---|
| | ▪ the number and type of unloaded logging vehicles leaving the site/day<br>▪ the number and type of unloaded vehicles arriving to the site to collect manufactured timbers/day<br>▪ the number and type of loaded vehicles with manufactured timbers leaving the site/day<br>▪ the number and type of private staff trips to the site<br>▪ the number, type, and frequency of service/delivery vehicles not already captured in the haul vehicle types referenced above<br>▪ shift start and end times for the proposed development<br>▪ confirmation of operational days and times per year.<br>o The distribution of trips generated by the proposed development to the state-controlled road network.<br>o Identification of the commonly used haul routes for all vehicle types identified above.<br>o An assessment of the suitability of intersections on the state-controlled road network that are impacted by traffic generated by the development, such as the Kingaroy-Cooyar Road/Boonenne Road intersection and the Bunya Highway/Boonenne Ellesmere Road intersection.<br>o A Pavement Impact Assessment in accordance with section 13 of the GTIA. Where an increase of greater than 5% is identified on road segments, identify the value of pavement impact contributions required. |

**How to Respond**

You have three months to respond to this request and the due date to SARA is **7 May 2024.**

You may respond by providing either: (a) all of the information requested; (b) part of the information requested; or (c) a notice that none of the information will be provided. Further guidance on responding to an information request is provided in section 13 of the Development Assessment Rules (DA Rules).

It is recommended that you provide all the information requested above. If you decide not to provide all the information requested, your application will be assessed and decided based on the information provided to date.

You are requested to upload your response and complete the relevant tasks in MyDAS2.

As SARA is a referral agency for this application, a copy of this information request will be provided to the assessment manager in accordance with section 12.4 of the DA Rules.

If you require further information or have any questions about the above, please contact Cavannah Deller, Senior Planning Officer, on 07 3244 9343 or via email WBBSARA@dsdilgp.qld.gov.au who will be pleased to assist.

Yours sincerely

Luke Lankowski
Manager, Planning – Wide Bay Burnett

cc South Burnett Regional Council, info@sbrc.qld.gov.au

| **Development Details** | |
|---|---|
| Description: | Development Permit Material Change of Use for high Impact Industry (Sawmill) and Concurrent ERA 47 – Timber Milling and Wood Chipping |
| SARA Role: | Referral Agency |
| SARA Trigger: | • Schedule 10, Part 5, Division 4, Table 2, Item 1 (10.5.4.2.1) of the Planning Regulation 2017 – Environmentally Relevant Activity (ERA)<br>• Schedule 10, Part 9, Division 4, Subdivision 1, Table 1, Item 1 (10.9.4.1.1.1) of the Planning Regulation 2017 – Development impacting on State transport infrastructure |
| SARA Reference: | 2401-38585 SRA |
| Assessment Criteria: | State code 6 and State code 22 of SDAP |

# RESPONSE TO INFORMATION REQUEST

## Development Application Material Change of Use,

## Application for Environmental Authority

## ERA 47(b) Sawmilling & Woodchipping

MAY 2024

Boonenne Timbers
157 Boonenne Road, Goodger, Qld, 4610
Lot 4 RP 807137



BOONENNE TIMBERS

ABN 74 624 946 904

# PROJECT INFORMATION

| | | |
|---|---|---|
| Report Title: | Response to Information Request for Application for Environmental Authority ERA 47(b) | |
| Report Preparation: | IMEMS Pty Ltd | |
| Distribution | Copies of Report to: | Number |
| | Boonenne Sawmill | 1 electronic copy |
| | IMEMS Pty Ltd | 1 electronic copy |
| | DESI | 1 electronic copy |
| Project Manager | Paul Anderson (MEnvMan, MSc, BAppSc) of IMEMS Pty Ltd. CEnvP (CLSpecialist), EIANZ, ASSSI, ALGA, IECA. | |
| Client: | BOONENNE TIMBERS | |
| Client Contacts: | Andrew Keenan and Elizabeth Keenan | |
| Prepared by | IMEMS Pty Ltd<br>Ph: 07 5478 8422<br>PO Box 411 PALMWOODS Q 4555 | |
| Version / Date: | DRAFT MAY 2024 | |
| Document file path: | N:\2024\Clients\Boonenne Timbers\22053_EA Appln\SARA INfo Req\22053 DA-MCU&EA Applic DES&SARA IR response - 240513.docx | |

# LIMITATIONS OF REPORT

The scope is limited to presenting relevant information to support application for Environmental Authority (EA) for ***ERA 47(b) – Timber milling and woodchipping more than 10,000t but not more than 20,000t in a year*** on behalf of the Boonenne Timbers and is based on information supplied and site inspections undertaken. The outcomes are based upon the following:

- Observations of the project site and its vicinity;
- Review of information provided by Boonenne Timbers; and
- Publicly available data published by Local Authority and Qld Government departments.

Neither IMEMS Pty Ltd, nor any reputable consultant can provide unqualified warranties, nor does IMEMS Pty Ltd assume any liability for:

- Site conditions not observed or accessible during the time of site visits and inspections;
- Site characteristics and operations that have changed since the time of site visits; and
- Information, data or documentation not made available during the review process or that which has changed since the site visit or since being made available.

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# 1 INTRODUCTION

This document has been prepared for Boonenne Timbers (BT) in response to State Assessment and Referral Agency (SARA) request for additional information on processes located at 157 Boonenne Road, Goodger in response to application for Environmental Authority (EA) for ***ERA 47(b) – Timber milling and woodchipping more than 10,000t but not more than 20,000t in a year*** dated 6th February 2024 for assessment against State code 6: Protection of state transport networks (State code 6) and State code 22: Environmentally relevant activities of the State Development Assessment Provisions (SDAP).

This document provides additional information on management of potential risks of:

- Air Impact.
- Stormwater Impact.
- Traffic Impact.

# 2 AIR MANAGEMENT

## 2.1 Point Sources

*<u>Information Request:</u> Identify any point source emissions (eg, generators, cyclones and including vents) on site with the following details:*

*a. Provide a table that identifies each point source, its height, minimum efflux velocity, and the contaminants proposed to be monitored.*

*b. Provide the concentration (minimum, average, maximum) of the contaminants provided for each release points (i.e. mg/Nm$^3$) as well as the relevant % correction for $O_2$ where applicable.*

There is only (1) locations onsite where point source emissions are generated. This is the green mill chipper (see point A in ***Figure 1*** below). This is a cyclone that efficiently captures dust and debris created by machining operations. ***Figure 1*** below identifies the location of the cyclone. There are no other point source stacks or vents emitting gaseous or particulate contaminants at the site (e.g. industrial generators or combustion/pressure vessels).


**Figure 1: Point Source Locations**

The details of the cyclone (located at point A) are:

- Year of manufacture - early 1980's
- Diameter – 1650mm
- Cyclone length before transition – 1200mm
- Transition length of cone -1250mm
- Overall height -2450mm on stand (4750 mm above ground level, respectively)

Figure 2 below shows the cyclone.

Figure 2: Green Mill Chipper Cyclone

The efflux velocity of the cyclone is not known and no minimum velocity (m/sec) is proposed to be set in the EA. This is because cyclones are designed to separate particulates from the air through centrifugal force within the unit, which pushes dust and debris to the outside wall where they spiral down under gravity and fall into a receptacle. Clean air passively escapes the outlet according to the inlet pressure and the volume of particulates within the air stream. This is a different process to that occurring in stack emissions (from power stations for example) that require minimum efflux velocities to achieve suitable ground level concentrations through atmospheric dispersion.

A simple schematic of a cyclone is shown in ***Figure 3*** below.

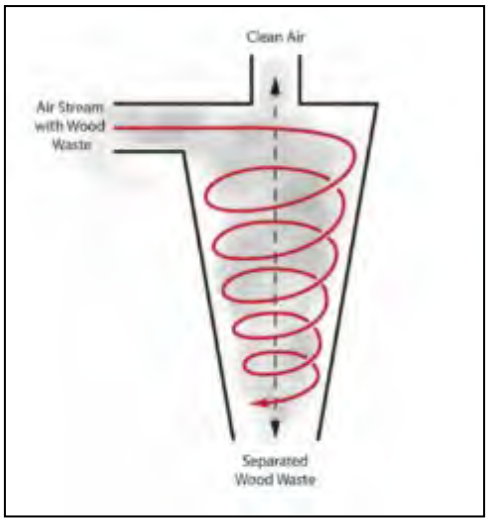


Figure 3: Sawdust Cyclone Schematic

(source: https://knowledge.axminstertools.com/axminster-craft-cyclone-dust-extractors/)

The outlet of the cyclone is fully encased into the conveyor.

The contaminants proposed to be monitored at the cyclone is limited to solid particles (dust). In terms of release limits, it is understood that DES refer to the NSW *Protection of the Environment Operations (Clean Air) Regulation 2021* to determine the appropriate standards of concentration. In this regard, Section 33 of the regulation identifies that Group 4 activities in summary, relate to activities that commenced post 1 July 1986 and pre 1 August 1997. We can confirm that Group 4 timeframes are relevant to the age of the cyclone onsite. Therefore in accordance with Schedule 4 standards of concentration for general activities and plant, we seek a release limit of 250 mg/m$^3$. A suggested EA condition for point source air emissions follows:

*Contaminants must only be released from point source(s) to air in accordance with Table – Point source air release limits.*

**Table 1 Point Source Air Release Limits**

| Release Point (GDA 2020) | | | Contaminant | Maximum Release Limit | Monitoring Frequency |
|---|---|---|---|---|---|
| Reference | Latitude | Longitude | | | |
| Green mill chipper cyclone | -26.61509 | 151.80907 | Solid particles (dust) | 250 mg/m$^3$ | Upon request by the administering authority |

## 2.2 Potentially Sensitive Receptors

A thorough review of the indicators listed in Schedule 1 (Air Quality Objectives) of the Environmental Protection (Air) Policy 2019 has been undertaken. The outcome of this review has identified that particulate matter (PM) is the only conceivable indicator requiring consideration against the Environmental Protection (Air) Policy 2019. This is addressed in our response to the following information request item.

## 2.3 Air Modelling

*Information Request: Demonstration that the proposed development can comply with the Common Conditions – Prescribed Environmentally Relevant Activities (ESR/2015/1828). In particular PCA003 for PM2.5 and PM10 emission limits. Dust and particulate matter emissions must not exceed the following concentrations at any sensitive place or commercial place:*

*a) dust deposition of 120 milligrams per square metre per day, when monitored in accordance with Australian Standard AS 3580.10.1 (or more recent editions), or*
*b) a concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre (µm) (PM10) suspended in the atmosphere of 50 micrograms per cubic metre over a 24 hour averaging time, when monitored in accordance with Australian Standard AS 3580.9.6 (or more recent editions) or any other method approved by the administering authority.*

Air modelling is considered to be unnecessary and overly onerous for the proposed activity given the low risk of air quality impacts to nearby commercial and residential sensitive receptors from sawmilling operations and considered minimal likelihood of impact to potential environmental receptors. This is due to particulate matter (PM) generated by conventional "green" timber milling activities being generally quite coarse (large particles) and moist, with sawdust having a propensity to fall out of the air column rapidly and not be respirable (i.e. less than 10 µm). The higher risk of respirable dust generation (including PM2.5 and PM10) would be associated with onsite vehicle engine combustion and movements along unsealed trafficable areas, as well as neighbouring agricultural activities, intensive animal raising (poultry, piggeries etc), coal mining, coal fired power stations, coal fired power station ash management and public roads such as Boonenne Road and other unsealed roads in the district.

The on site risks are considered to be adequately managed via the following proposed mitigation measures:

- Minimising unnecessary truck idling whilst stationary;
- Restricting onsite speed limits to 15 kph;
- Monitoring of wind conditions and ensuring trafficable areas are watered and/or operations are temporarily ceased as required;
- Maintenance of trucks and mobile plant in accordance with manufacturer recommendations;
- Dust suppression of roadways is undertaken using water trucks (***Figure 4***);
- Sawdust stockpiles are managed by spraying with water when required via a batter spray on the site water dust suppression truck]; and
- Consideration of a program for planting dust trapping endemic vegetation (e.g. *Casuarina spp* and *Allocasuarina spp*) along priority boundaries of the site.

Figure 4: On Site Dust Suppression Truck

We are therefore of the opinion that PM associated with the proposed activity can be appropriately managed in compliance with common conditions applied to Environmental Authorities for dust and PM10 emission limits (as specified). In any case, PM2.5 and PM10 emissions from site operations will be grossly overshadowed by industrial, transport, feedlots, land clearing, vegetation fires, dust storms as well as broad scale grazing and agricultural impacts to ambient air quality in the local and regional surrounds, with examples detailed in the following sections.

Traffic and Transport

Boonenne Sawmill is located on Boonenne Road which is a cross-road between major roads connecting Kingaroy to the North, Dalby to the South West and the Cooyar to the South. The coal mining, coal fired power generation, coal fired power station ash management and primary industry (agriculture, horticulture, siliviculture, pharmaceutical *Duboisia* sp cultivation / processing, cattle / horse grazing etc) in the South Burnett contributes to significant light and heavy vehicle movements on both major and minor roadways.

Heavy vehicles account for the majority of: pig and cattle transfers between pastures and to feedlots, saleyards and abattoirs, produce for domestic markets and other general freight movements. These traffic movements alone contribute substantially to particulate matter with 2022 traffic census data indicating an average of 129 heavy vehicle movements on the Kingaroy-Cooyar Road per day, and 297 heavy vehicle movements on the Kingaroy-Cooyar Road per day.

Surrounding Land Use

Intensive agriculture, horticulture and grazing along with intensive animal production (pigs, poultry), coal mining, coal fired power generation, coal fired power station ash management and primary industry, siliviculture, pharmaceutical *Duboisia* sp cultivation / processing etc are practiced widely in surrounding landscape to Boonenne sawmill. These activities along a wide network of unsealed roads and low average annual rainfall (<800mm) are well acknowledged to contribute to high levels of air borne dust from road use alone, aside from actual activities including agricultural / horticultural / silvicultural / pharmaceutical cultivation, animal movements, coal mining, coal fired power stations, coal fired power station ash management.

The neighbouring property to the south east operates a commercial sawmilling operation accessed via an unsealed road along the western boundary of Boonenne sawmill and also burns sawmilling waste on a continuous basis. This property also hosts *Duboisia* cultivation and processing for pharmaceutical production, intensive grazing and silvicultural activities – all of which can produce exceptional amounts of airborne dust.

Meandu Coal Mine

Meandu Coal Mine (approximately 22 km south-east of Boonenne Timbers) contributes to air contaminants including PM10 and likely PM2.5. No recent (independently produced) data is available on air quality at the mine and surrounds, however anecdotal reports indicate air environmental values have been significantly impacted in the areas surrounding the mine site.

Stanwell Corporation Limited, Meandu Mine contributed substantial fugitive PM10 emissions during the 2023 reporting year (4,000,000 kg) and 39,000 kg PM2.5. Other air emissions from SCL, Meandu Mine included 420 kgs sulphur dioxide, 640,000 kgs nitrogen oxides, 250,000 kg carbon monoxide and 47,000kg Total Volatile Organic Compounds

Tarong Power Stations (Tarong and Tarong North)

NPI air emissions data was examined for Tarong Power Station (TPS) located approximately 21km south-east of Boonenne Timbers. Stanwell Corporation Limited, TPS contributed substantial fugitive PM10 emissions during the 2023 reporting year (100,000 kg) and 60,000 kg PM2.5. Other air emissions from SCL, TPS included 4.9 million kgs sulphur dioxide, 5 million kgs nitrogen oxides, 250,000 kg carbon monoxide and 170,000 kg hydrochloric acid and 20,000kg total Volatile Organic Compounds.

NPI air emissions data was examined for Tarong North Power Station (TN) located approximately 21.8km south-east of Boonenne Timbers. Stanwell Corporation Limited, TPS contributed substantial fugitive PM10 emissions during the 2023 reporting year (100,000 kg) and 60,000 kg PM2.5. Other air emissions from SCL, TN included 4.9 million kgs sulphur dioxide, 5 million kgs nitrogen oxides, 250,000 kg carbon monoxide and 170,000 kg hydrochloric acid and 20,000kg total Volatile Organic Compounds.

Feedlots

NPI air emissions data was examined for Riverbend Group Farming (Inverlaw) – Pig Farming, (5.24km south west of Boonenne Timbers) and Clarrich Farms (Nanango) (10.53 south east of

Boonenne Timbers) contributed to ammonia emissions during the 2023 reporting year (20,000 kg and 37,000 kg respectively).

Peanut Company - Kingaroy

PM10 emissions during the 2023 reporting year were (110 kg PM10, 60kg PM2.5 and 580kgs of Carbon Monoxide)

Bacon Factory - Kingaroy

PM10 emissions during the 2023 reporting year were (1,100kg PM10, 210kg PM2.5 and 2400 kgs of Carbon Monoxide, 12,000kg of Oxides of Nitrogen, 24000kg of Carbon Monoxide and 880kg of Sulfur dioxide.

# 3 STORMWATER MANAGEMENT

## 3.1 Site Opportunities

The following site opportunities are presented by the BT site:

- There sawmill owners live on site and provides site security and surveillance out of operational hours. A number of BT staff also live close by in Kingaroy and are available to assist in cases of emergencies out of hours;
- There are no waterfront (riparian) lands on the site or nearby;
- Flood mapping indicates that the site does not flood;
- Some overland flow enters the site on the western boundary. This water reports to the stormwater dam for water harvesting for dust suppression;
- Natural / native soils stratigraphy is generally red soils overlaying clay layers then granite, which have low erosion potential (refer Table 4. Supplementary Document No. 1. IMEMS, 2023);
- There are no acid sulphate soils on or adjacent to the site;
- There is minimal risk of soil contamination on site with no notifiable activities having been undertaken on or adjacent to the site. Across the site, controls are in place where potentially contaminating activities (see *Table 1*) are undertaken to minimise risk of stormwater contamination and potential risk of impact to the environment.
- Whilst all stormwaters are captured onsite for dust suppression, in the event of overtopping of the stormwater dam, these waters would report to neighbouring land used for sawmilling, Duboisia cropping / processing and cattle grazing on former agroforestry land.
- Large roofed areas (office and machinery shed) presently are used to capture supplementary rain water for general site use, fire water, process water and dust suppression should this additional water be required. The water is stored on site in rainwater tanks. There is no further potential to increase rainwater harvesting by guttering the main timber shed and directing this water to rainwater tanks.
- Large areas of the site that that generate relatively clean runoff water (such as the undisturbed areas and house yard in the northern portion of the site are to be diverted to offsite as clean stormwater.
- Accumulated silt and sediment (largely wood fibre) is regularly collected and despatched:
  - (80%) Searles composting facility in Kilcoy (80%) together with sawdust, bark and wood chip.
  - (20%) would also be included in bark or sawdust that is taken to landscaping yards and feedlots in Dalby, Rockhampton or Sunshine Coast.

  Should there be a likelihood of any contamination of runoff and associated sediment, controls will be implemented to isolate potentially contaminated runoff and sediment for investigation.
- All other wastes (liquid and solid) are stored in covered and where necessary bunded areas until being collected for lawful disposal / recycling by licenced contractors. Sewage is collected weekly by JJ Richards. Accordingly, no wastewater is disposed of to land on the site.
- A stormwater collection dam (Stormwater Dam) will be constructed in the south-eastern corner of the log yard to assist in mitigating risk of impact from log yard generated sediment. This dam is regularly pumped out for dust suppression to supplement water imported to site from the Taron bore used for dust suppression.

## 3.2 Site Constraints

The following site constraints are presented by the BTS site:

- Operability of the site must be maintained at all times during operation of the sawmill.
- Mitigation measures should not rely on continual or excessive maintenance.
- The unpaved logging yard presents a source of suspended sediment for stormwater runoff, although the log yard has been cut to a stable and hard ground surface presenting low risk of excessive erosion or sediment generation and the log yard area is covered with a thick layer of bark and wood fibre which serves to trap any fine sediment.

## 3.3 Catchment Area

### 3.3.1 Digital Terrain, Contours & Surface Waters

***Figure 5*** illustrates the digital terrain and 1 m contours of the site. The primary sawmilling operations present at approximately 487 m AHD. The land typically grades from the north at (491 AHD) to the south-east to (483m AHD) at its lowest elevation in the northern extremity of the site.

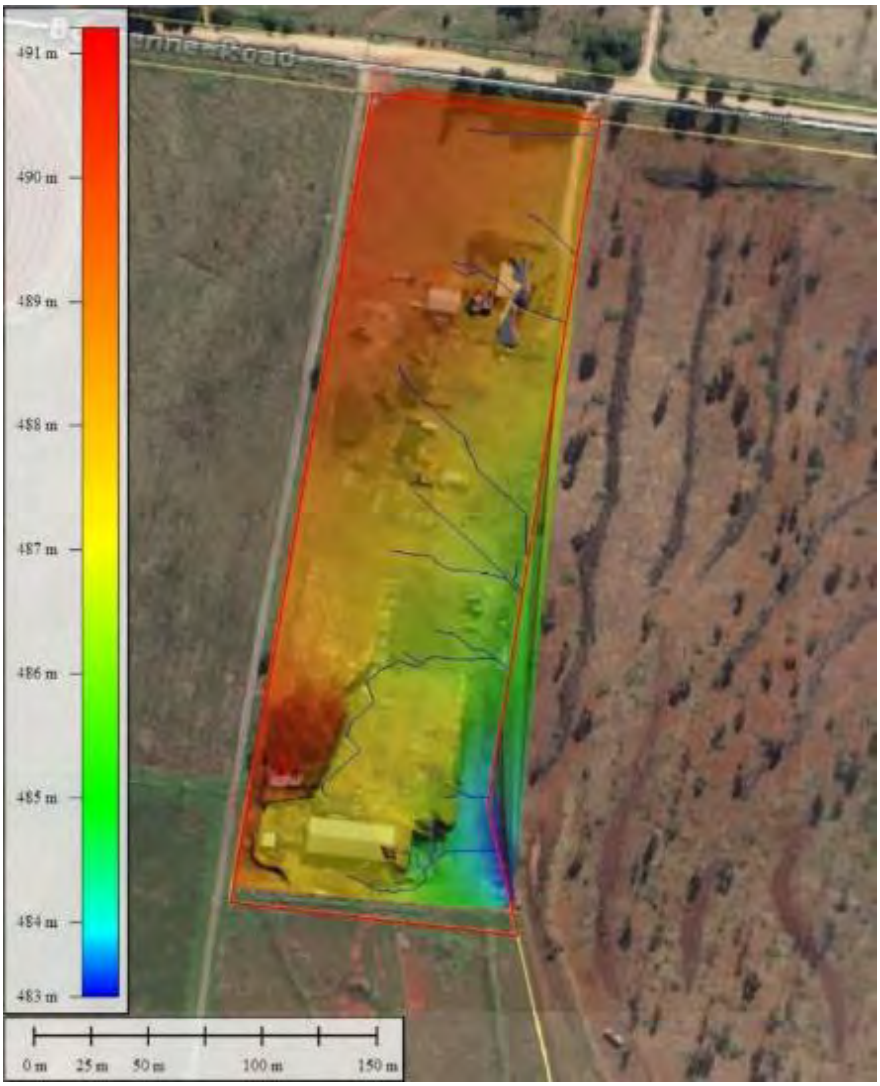


Figure 5: Digital terrain and elevation contours

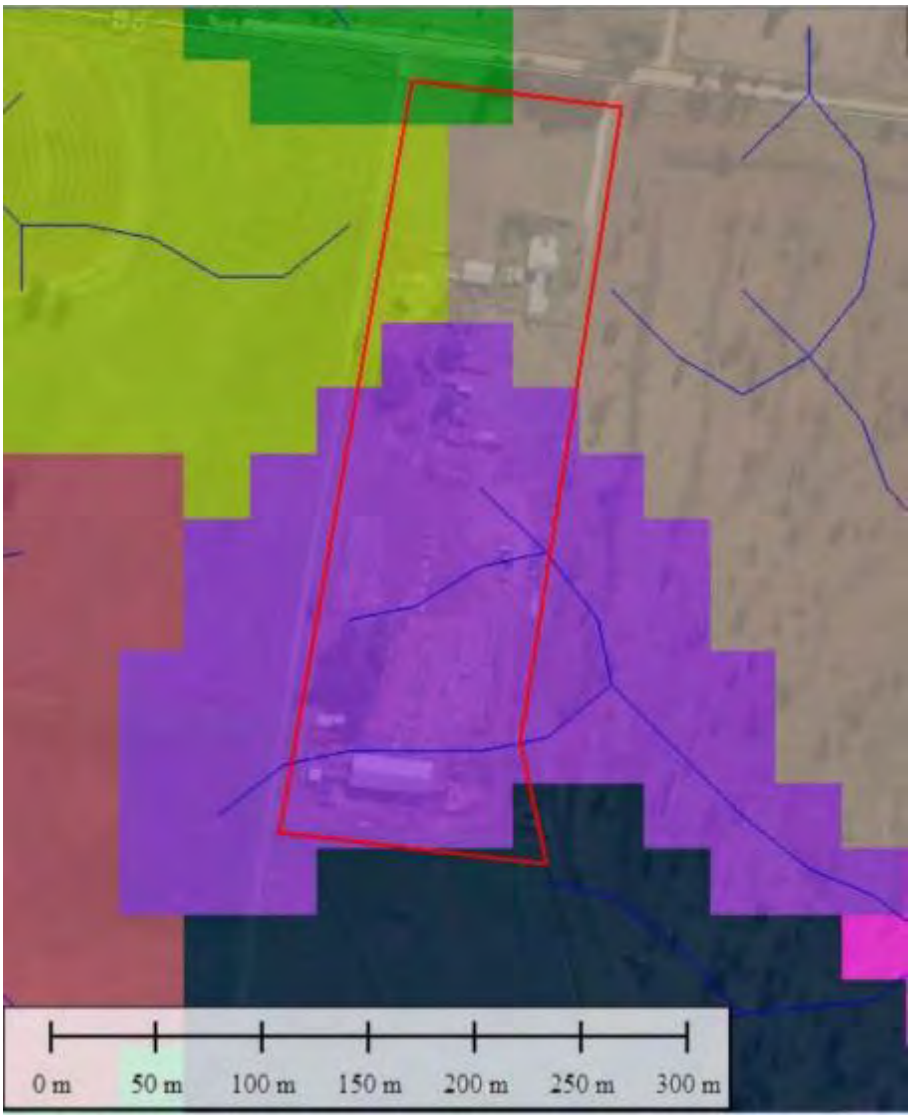


Figure 6: Catchments Identified Using LiDAR Data

Natural drainage from the site generally flows in a south-east direction to the south-eastern corner. Diagram 2 shows the surface water flows from the site. Of note drainage lines are not permanent water bodies, flowing only in during rainfall events.

The site is considered as two (2) catchments with modelling for stormwater dam volumes with indicative boundaries shown in above. The catchments and indicative drainage lines were modelled using Global Mapper™ software catchment simulation from publicly available LiDAR (survey) data (ELVIS:2023).

As clean stormwater is diverted from the northern portion off the site (Catchment 1), catchment analysis is only required for Catchment 2.

## 3.4 Potential Pollutants, Controls, Assessed Risk

Catchment 2 located in the southern portion of the site operations and comprises of: Log storage yard, trafficable areas, green mill, sawdust storage in above ground hopper, wood chip storage, site office and maintenance workshop, fuel storage, sewage treatment and collection, and roofed areas reporting to rain water collection tanks.

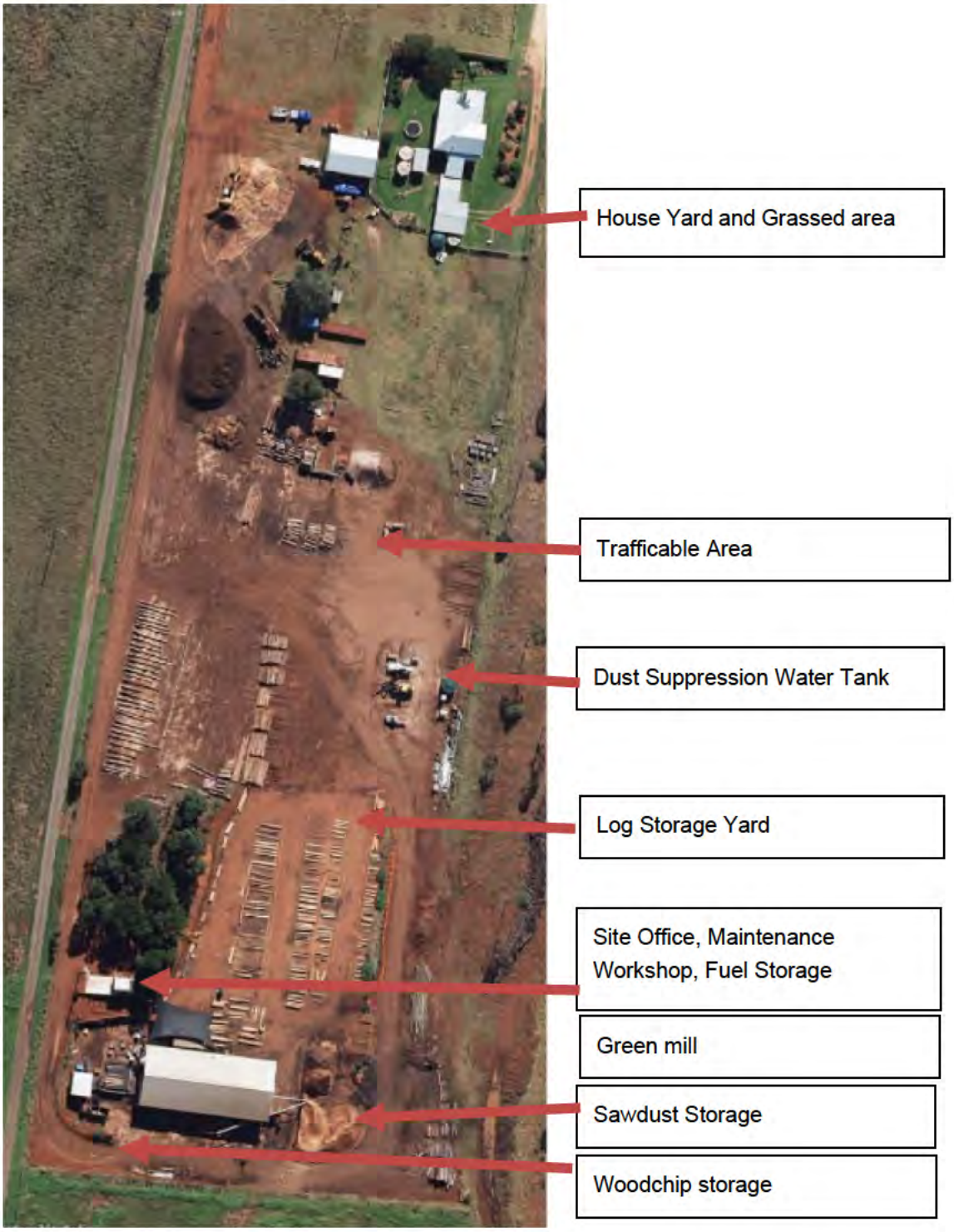


Figure 7: Infrastructure at Boonenne Timbers

***Table 2*** summarises potential stormwater pollutants associated with key site infrastructure, controls in place, the related potential risk of impact to site generated stormwater with and without controls.

**Table 2 Catchment Infrastructure, Potential Pollutants, Controls (In place & Planned), & Risk Ratings (With & Without Controls)**

| Catchment ID | Key Site Infrastructure (refer Diagram 3) | Potential Pollutants | Risk Rating Without Controls | In place Controls, Planned Controls. (refer Diagram 8) | Risk Rating With Controls |
|---|---|---|---|---|---|
| 1 | House yard and grassed area | Sediment | Low | • Clean stormwater diversion offsite.<br>• Sewage regularly maintained by licenced contractor.<br>• Site Entrance | Low |
| 2(a) | Log storage yard | Sediment, limited amount of bark & wood fibre. | Medium | • Stormwater management dam located to the south eastern boundary of this catchment with water levels maintained low particularly during wet season and if > 100mm of rain predicted in 24 hrs. First flush sluice gates direct stormwaters to SW1 when stormwater dam is at capacity. Release point SW2 (located at the stormwater dam) spillway enables release of waters within quality criteria outlined in Table 7. | Low |
| | Trafficable area | Sediment, sawdust and lubricants. | Low | • Road surfaces are unsealed but the soils are heavily compacted.<br>• Regular road maintenance. | Low |
| | Green mill,<br>Sawdust storage in above ground hopper.<br>Woodchip storage | Sediment and sawdust. | Low | • Higher risk sawmilling processes under roof on concrete pad.<br>• Sawdust directed to an above ground hopper. Sawmill processes green (moist) logs, therefore emission of suspended particles from chipper is negligible.<br>• Maintenance of chipper silo to capture the majority of fugitive dust from conveyor outfeeds<br>• Regular maintenance of sawdust extraction, conveying and blower pipe infrastructure to ensure proper function.<br>• Collection of sawdust and shavings stored onsite by weekly collection by contractor | Low |
| | Site Office and Maintenance Workshop, Fuel Storage | Small volumes of hydrocarbon fuels, hydraulic oils, lubricants, sewage, sawdust. | Medium | • Rain water from site offices and shed roof is directed to stormwater tanks<br>• Higher risk processes under roofs on concrete pads, bunding where required.<br>• Regular Maintenance.<br>• No wood treatment chemicals are used on the site.<br>• Hydrocarbon spill kits at hand if required.<br>• Sewage treatment system maintained monthly by external contractor. | Low |
| 2(b) | Roofed areas reporting to water tanks | NIL | Low | • Rainwater harvesting from site offices and sheds located between the office and the chipper (Tanks approximately 10,000L) | Low |

## 3.5 Site Stormwater Drainage

Clean stormwater is diverted along the western site boundary prior to entry to the project area. The north portion of the site is predominantly grassed, which acts to slow stormwater flows and trap sediments. There is a low bund along the east boundary which directs stormwater to the sediment basin. Along the south boundary, there is a 1 m high grassed earthen bund, which also directs stormwater to the sediment basin.

Stormwater from catchment 2a currently flows across the ground and roads, and ultimately to the Stormwater Dam on the South East corner of the site, where it is retained for dust suppression. Stormwater management controls have been identified in ***Table 2*** along with the assessed risk of impact .

Stormwater from roofed areas are captured and stored for onsite use. These are approximately 102m$^2$.

Figure 8: Catchment Area of Machinery Shed


Figure 9 Catchment Area of Administration Building

### 3.5.1 Land availability for stormwater retention extension

Opportunity exists for the extension of the stormwater dam located in the south eastern corner of the site. Approximately 404m$^2$ is available as seen below in ***Figure 10.***

Figure 10: Available Area for Stormwater Dam extension

## 3.6 Design Flows

The State Assessment and Referral Agency (SARA) have communicated to BTS that stormwater controls should retain runoff from a 10% Annual Exceedance Probability (AEP) event.

Using the Bureau of Meteorology (BoM) AR&R87 IFD tool and selecting the central coordinates of the site (-26.6145 Latitude 151.809 Longitude), the 10% Annual Exceedance Probability (AEP) rain event design rainfall depth is 121mm. (*Water Information: Bureau of Meteorology, Water information IFD Data System (bom.gov.au)*, 2023)

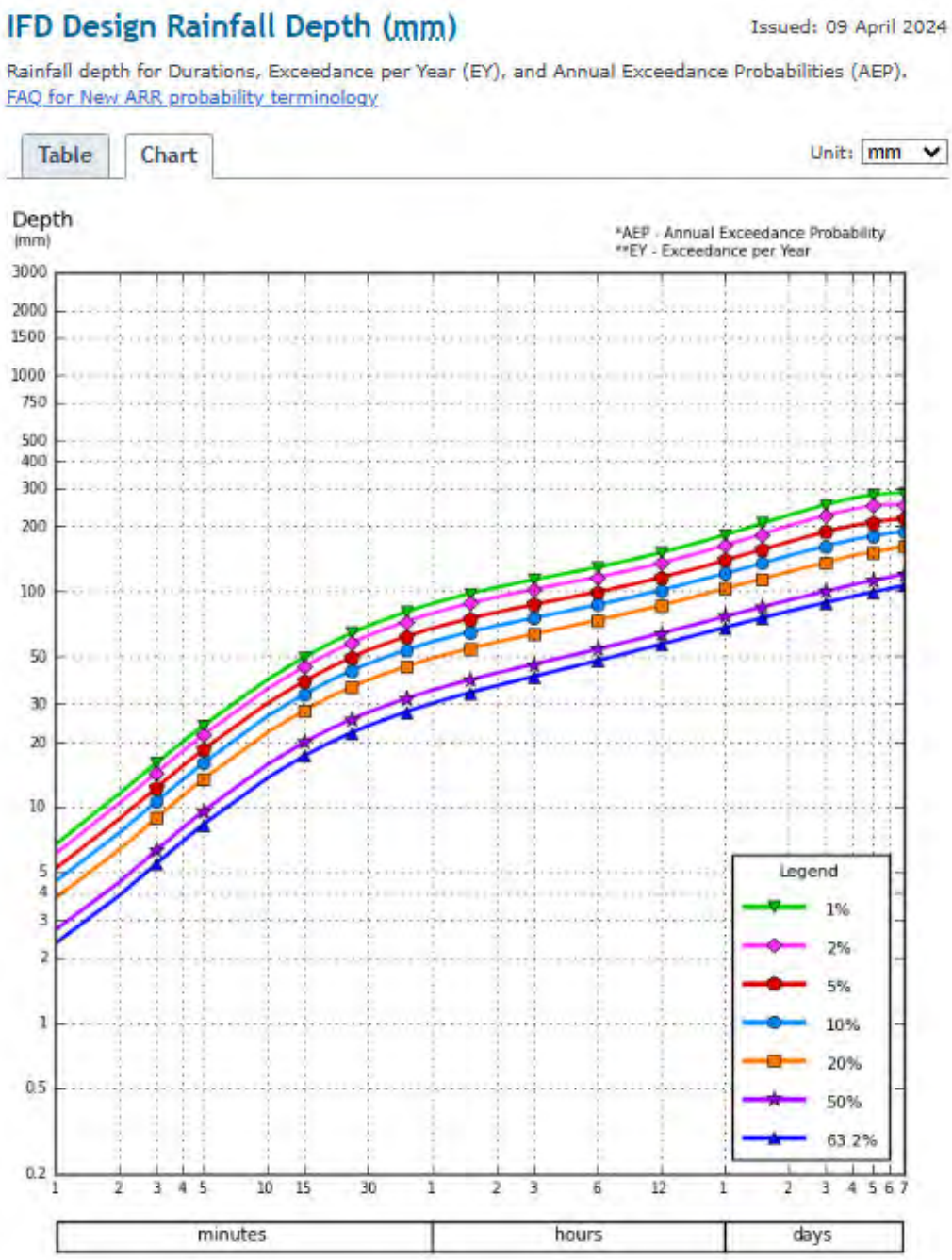


Figure 11: IFD Design Rainfall Depth at Boonenne Timbers


Figure 12: Boonenne Timbers Stormwater Catchment Area

Department of Environment, Science & Innovation (DESI) (2024). *Guideline: Stormwater and environmentally relevant activities*, Environmental Services & Environmental Regulatory Practice (non-Mining). Version 1.04. Updated 13/02/2024) advises calculation of stormwater dams (for highly erodible areas) using the following equation:

$$\text{Volume} = A \,.\, C_v \,.\, D_{(10\%\ \text{AEP. X hr})}$$

Where:

Settling Volume ($m^3$)
A= catchment area ($m^2$)
$C_v$ = volumetric runoff co-efficient
R = Rainfall depth for design rain event (10% AEP, 24 hrs)(m)

24 hour volume of runoff for Catchment 2 relative to varying stormwater dam design depths (1.4m, 2m and 3.9m) is shown in ***Table 3*** below.

Table 3 Catchment Design Flows (10 year ARI 24 hour event)

| Catchment # | Catchment Area including roofs | Area currently roofed (m2) | Area of Runoff (m2) | Runoff Coefficient | Rainfall (mm/24hr) | Runoff (m3) | Available Basin Area (m2) | Basin Depth (m) | Basin Volume (m3) | Residence Time (hrs) | Compliance | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | 24h event (10% AEP) | Runoff managed by settling over the given residence time? |
| Available basin area = **400m²**, Tanks 10,000L on site | | | | | | | | | | | | |
| 2a | 21555.98 | 101.33 | 21455 | 0.6 | 121 | 1558 | | | | | | |
| 2b | | 101.33 | 101.33 | 1 | 121 | 12 | | | | | | |
| TOTAL | | | | | | 1570 | | | | | | |
| less volume of rainwater tank (m3) | | | | | | 10 | | | | | | |
| total volume less rainwater tanks | | | | | | **1560** | | | | | | |
| SCENARIO 1: Depth of 400m2 basin required to **24 hours** for to retain 24 hours of runoff | | | | | | | | | | | | |
| | | | | | | 1560 | 404 | 3.9 | 1575.6 | 24.09 | ✓[1] | ✓[1] |
| SCENARIO 2: Determination of residence time within 400m2 basin for consideration of settling of material within the basin. | | | | | | | | | | | | |
| | | | | | | 1560 | 404 | 2 | 808 | 12.35 | ✗ | ✓[1,2] |

NOTE:

- $10m^3$ of rainwater capture in onsite tanks,
- runoff co-efficient of 1.0 for roofed areas and 0.6 for unroofed areas.

10year AEP, 24 hr event calculated volume is $1575.6m^3$. For the available land area ($404m^2$), this requires a stormwater dam depth of 3.9m and does not take the fast settling nature of entrained matter into consideration.

Settling velocities for site sediments (based on a combination of very fine silt and clay classifications as detailed in DES's online Wetland Info series) provide additional insight into the likely amount of sediment that would settle within various residence times for the design 3.9m stormwater dam. These calculations are provided in ***Table 5*** below. It is observed that sediments settle to maximum stormwater dam depth (3.9m) within 5 hours.

**Table 4: Residence Times and Settling Velocities (10% AEP, 24 hour event), 3.9m depth**

| Basin Retention volume ($m^3$) | Residence Time excl (hrs) | Settling velocity (m/s)* | Settling depth (m) according to residence time | Dam average depth (m) | % of material settled within residence time |
|---|---|---|---|---|---|
| 1560 | 1 | 0.000255 | 0.9 | 3.9 | 24% |
| 1560 | 2 | 0.000255 | 1.8 | 3.9 | 47% |
| 1560 | 3 | 0.000255 | 2.8 | 3.9 | 71% |
| 1560 | 4 | 0.000255 | 3.7 | 3.9 | 94% |
| 1560 | 5 | 0.000255 | 4.6 | 3.9 | 118% |
| 1560 | 6 | 0.000255 | 5.5 | 3.9 | 141% |
| 1560 | 7 | 0.000255 | 6.4 | 3.9 | 165% |
| 1560 | 8 | 0.000255 | 7.3 | 3.9 | 188% |
| 1560 | 9 | 0.000255 | 8.3 | 3.9 | 212% |
| 1560 | 10 | 0.000255 | 9.2 | 3.9 | 235% |
| 1560 | 11 | 0.000255 | 10.1 | 3.9 | 259% |
| 1560 | 12 | 0.000255 | 11.0 | 3.9 | 282% |
| 1560 | 13 | 0.000255 | 11.9 | 3.9 | 306% |
| 1560 | 14 | 0.000255 | 12.9 | 3.9 | 330% |

*Settling velocity based on average of very fine silt / clay classification taken from *https://wetlandinfo.des.qld.gov.au/wetlands/management/treatment-systems/for-agriculture/treatment-sys-nav-page/sediment-basins/planning-design.html*

A stormwater dam of 3.9m depth is not preferred, due to potential safety implications of large vehicles moving around the site.

Using a risk based approach, dam depths could be reduced by consideration of a "first flush" mechanism to capture the initial volume of fast settling sediment, and then diversion of cleaner stormwaters once the stormwater dam reaches capacity.

Using a reduced stormwater dam depth of 2m, approximately half of the 10% AEP, 24 hour event could be retained for settling (refer Table 3, Scenario 3). Sediment settling time to 2m is 3 hours (138% settling) (***Table 6***) below:

Table 5: Residence Times and Settling Velocities (10% AEP, 24 hour event), 2.0m depth

| Basin Retention volume ($m^3$) | Residence Time excl (hrs) | Settling velocity (m/s)* | Settling depth (m) according to residence time | Pond average depth (m) | % of material settled within residence time |
|---|---|---|---|---|---|
| 808 | 1 | 0.000255 | 0.9 | 2.0 | 46 |
| 808 | 2 | 0.000255 | 1.8 | 2.0 | 92 |
| 808 | 3 | 0.000255 | 2.8 | 2.0 | 138 |
| 808 | 4 | 0.000255 | 3.7 | 2.0 | 184 |
| 808 | 5 | 0.000255 | 4.6 | 2.0 | 230 |
| 808 | 6 | 0.000255 | 5.5 | 2.0 | 230 |
| 808 | 7 | 0.000255 | 6.4 | 2.0 | 321 |
| 808 | 8 | 0.000255 | 7.3 | 2.0 | 367 |
| 808 | 9 | 0.000255 | 8.3 | 2.0 | 413 |
| 808 | 10 | 0.000255 | 9.2 | 2.0 | 459 |
| 808 | 11 | 0.000255 | 10.1 | 2.0 | 505 |
| 808 | 12 | 0.000255 | 11.0 | 2.0 | 551 |
| 808 | 13 | 0.000255 | 11.9 | 2.0 | 597 |
| 808 | 14 | 0.000255 | 12.9 | 2.0 | 643 |

By capturing first flush will be enabled by the use of sluice gates that will be closed when the dam is at capacity. Clean stormwaters will then to be directed off site upstream of the sluice gate.

This allows the most sediment laden water to be retained and harvested for reuse onsite for dust suppression onsite.

## 3.7 Stormwater Dam – Release locations

In the event activation of the "first flush" mechanism, stormwaters may be released at:

- SW1: Approximate location of sluice gate for stormwater diversion (lat: -26.61486, long 151.80990) (GDA2020)
- SW2: Approximate location of stormwater pond spillway (-26.61534, 151.80997) (GDA2020)


**Figure 13: Potential Stormwater Release Locations**

## 3.8 Existing Stormwater Mitigation Measures

A range of control measures have been developed over time on the site to additionally mitigate the risk of stormwater contamination. Measure are detailed as follows:

- All high risk contaminants are managed primarily at source via covered and bunded storage facilities (oil, grease, diesel). These areas are monitored continuously by operational staff. Safety and environmental representatives report any urgent issues ASAP to the area supervisor for prioritised attention and non-urgent issues weekly via the weekly environmental checklist. Hydrocarbon spill kits are in place to be used to capture any spills. Staff are also trained in the use of such spill kits.
- The diesel above ground storage tank (AST) is located immediately north of the caretakers house, south of main office building is a single skin steel tank contained within a roofed concrete bund. The diesel AST and mobile plant filling area is serviced with hydrocarbon spill kits which are available to capture any spills. Staff are also trained I the use of such spill kits.
- Rainwater draining from the roofed buildings (comprising the machinery shed and office) are directed to rainwater tanks to supplement site water needs.
- All potentially hazardous wastes (used oils, spent batteries etc) are stored in covered and where necessary bunded areas until collected for lawful disposal / recycling by licenced contractors. Sewage is collected weekly by an external contractor. Accordingly, no wastewater is disposed of to land on the site.
- Shallow areas where water tends to lie during wet weather have been used to capture water borne sediment including sawdust eg the areas within and downstream of log yard prior to water flowing to site ponds.
- Install sediment traps in drains across the site where sediment runoff is known to be significant (eg log and by-product (sawdust and shavings) storage.

## 3.9 Proposed Improvements

Proposed improvements include:

- Install fibre (e.g., coir) logs in additional points on the site (including table and roadside drains in Catchment 2.
- Ensure clean water diversion from Catchment 1 is unable to flow into catchment 2 by directing clean water offsite.
- Install a rock armoured spillway on the stormwater dam
- As funds permit, BTS may progressively connect additional selected site building roofs to collect stormwater for capture in rainwater tanks and subsequent reuse on site (e.g. dust suppression, fire water storage, site services).
- High traffic areas around the green mill have been concreted.
- Site roads outside of concreted areas are paved with locally sourced road base, “topped up” on an as required basis.

## 3.10 Maintenance & Inspection Program

Maintenance and inspection includes:

- Regular inspection of higher risk contaminant storage facilities.
- Spill kits inspected and maintained where there is risk of spills of hydrocarbons and chemicals.
- Regular inspection of stormwater treatment devices prior to and following rain events. Any accumulated sediment to be removed from stormwater treatment devices prior to and following rain events (e.g. sediment socks, in line spoon drain sediment traps, stormwater pond). Should rain be forecast, check all sediment traps are in place and remove any sediment that has built up.
- Water levels in stormwater dams to be maintained as low as practically possible during the “wet” season, particularly prior to impending > ~100 mm in 24 hr rain event.
- Maintenance of vegetation cover where possible.
- Maintenance of water diversion devices (banks, drains etc).
- Maintenance of flow velocity reduction devices (eg check dams, rock lined drains in and out of stormwater pond in catchment 3, coir logs / sediment traps installed across table drains etc).
- Maintenance of vegetation cover including grassed areas acting as swales for sediment trapping.

Of note: Site residues such as sawdust, logyard scrapings, chipped solid wood waste etc along with collected sediment from silt traps is reused through arrangement with Searles composting facility in Kilcoy. Should there be a likelihood of any contamination of runoff and associated sediment, controls will be implemented to isolate potentially contaminated runoff and sediment for investigation.

## 3.11 Water Quality – Stormwater Dam Release Water Quality Monitoring Limits

The receiving environment of excess stormwater are agroforestry now largely converted to cattle grazing. Accordingly, suitable water quality characteristics for monitoring are:

**Table 6: Contaminant Release Limits to Land**

| Release Points | Quality Characteristic [1,2] | Release Limit | | Minimum Monitoring Frequency |
|---|---|---|---|---|
| | | Limit | Type | |
| SW1, SW2 | pH[3] | 6.0-8.5 pH units | Range | Within 24 hours prior to release event |

[1] Sawmilling activities do not impact salinity. Groundwater sourced from the on site bore and Tarong bore and used in dust suppression has naturally high EC. EC is not considered as a suitable monitoring quality characteristic as the Water Quality Improvement Plan (WQIP) for the Burnett Mary Region does not include water quality objectives (WQOs) for EC in the Boonenne area (upland freshwaters – Burnett catchment). No adverse effect in animals is expected up to 4000mg/L TDS (5970mS/cm) (Australian and New Zealand Environment and Conservation Council (ANZECC), Livestock Drinking Water Guidelines, 2000, *Primary industries – livestock drinking water guidelines (draft) (waterquality.gov.au)*.

[2] TSS is not considered as a suitable monitoring quality characteristic as no release to land limit exists within *Chapter 9.2 of Water Quality for Irrigation and General Water Uses: Guidelines Report [Draft] January 2024 of the Australian & New Zealand Guidelines for Fresh & Marine Water Quality* (*https://www.waterquality.gov.au/sites/default/files/documents/irrigation-guidlelines-draft-9.2.pdf*).

[3] pH - Australian and New Zealand Environment and Conservation Council (ANZECC), Livestock Drinking Water Guidelines, 2000, *Primary industries – livestock drinking water guidelines (draft) (waterquality.gov.au)*. does not include guidelines for livestock drinking water. pH range between 5.0-9.0 is for irrigation waters is outlined in *Chapter 10.1 Water Quality for Irrigation and General Water Uses: Guidelines Report [Draft] January 2024 of the Australian & New Zealand Guidelines for Fresh & Marine Water Quality* (*https://www.waterquality.gov.au/sites/default/files/documents/irrigation-guidlelines-draft-9.2.pdf*). *NOTE: Groundwater sourced from the Tarong bore and used in dust suppression has naturally high pH.*

# 4 TRAFFIC MANAGEMENT

A traffic Impact Assessment following the Department of Transport and Main Road' Guide to Traffic Impact Assessment (GTIA) was undertaken to determine the impact of potential increases in traffic type and volumes from changes by the proposed development. Quantitative impact was assessed by comparison of base SARs and SAR4s of the proposed development. If greater than an increase of 5%, as identified by the Pavement Impact Assessment would be required as described within Section 13 of the GTIA, then a value ($) of pavement impact contributions would be required to be determined.

The number type and frequency of existing and additional vehicle movements is:

Table 7: Existing and Planned Vehicular Details

| | | | | SECTION 1 Kingaroy - Cooyar | | SECTION 2 : Dalby- Kingaroy | |
|---|---|---|---|---|---|---|---|
| Description | Current | Additional | Class | Against Gazettal North | With Gazettal South | Against Gazettal South | With Gazettal North |
| Log Trucks | 2 per week | 4 per week | 10 | Outbound unloaded | Inbound loaded | Outbound unloaded | Inbound loaded |
| Sawdust and chip truck | 1 per week | 2 per week | 10 | Outbound loaded | Inbound unloaded | Outbound loaded | Inbound unloaded |
| Sawn product trucks | 2 per week | 4 per week | 9 | Outbound loaded | Inbound unloaded | Outbound loaded | Inbound unloaded |
| Fuel truck | 1 per month | 1 per month | 4 | Outbound loaded | Inbound loaded | Outbound loaded | Inbound loaded |
| Firewood truck | 1 per month | 1 per month | 4 | Outbound unloaded | Inbound loaded | Outbound unloaded | Inbound loaded |
| Potable water truck | 1 per month | 1 per month | 4 | Outbound unloaded | Inbound loaded | Outbound unloaded | Inbound loaded |
| Light Vehicles | 7 per day | 1 per day | LV | Passenger vehicle | Passenger vehicle | Passenger vehicle | Passenger vehicle |

Shift start and end times for the proposed development continue unamended. Routine sawmill operating hours from 6a.m. to 5 p.m. Monday to Thursday, 6a.m. to 12p.m. Fridays. The sawmill may operate 7am to 12 pm on Saturdays as required. Maintenance and cleaning operations may continue to 6pm daily Monday to Saturday.

Vehicle routes are:

- **Heavy Vehicles -** Bunya Highway onto Aerodrome Road onto Kingaroy Cooyar Road into Boonenne Road. This route for heavy vehicles reduces the impacts on any residential areas and provides better visibility when entering and exiting intersections. It is also the NHVR approved B Double route.
- **Light Vehicles –** (1) Kingaroy Cooyar Road onto Boonenne Road; or (2) Bunya Highway onto Boonenne-Ellesmere Road onto Boonenne Road. The route for light vehicles can vary depending on where staff are located in Kingaroy and where they are going after work, but the above-mentioned routes are the only way to access the site.

The site does not permit public access and does not sell to the public. As such light vehicle traffic is much reduced to the site, largely limited to staff and occasional maintenance contractors.

Logs are sourced from Munduberra (80%) and South Blackbutt (20%). Sawn product is transported to Brisbane and Narangba

All additional traffic (100%) from the proposed development will be assumed to be travelling on all road routes for simplification of calculations for both Kingaroy-Cooyar Road and Dalby Kingaroy Road as follows:

If all additional light and heavy vehicular traffic to and from Boonenne Timbers were using the Kingaroy-Cooyar Road this represents:

- **Heavy Vehicles** average/day increase (inbound and outbound)
  = Log, Sawdust, Sawn product, Fuel, Firewood and Potable water
  = +3.05/day (includes inbound and outbound traffic)
- **Light Vehicles** average/day
  = +2/day (includes inbound and outbound traffic)

Table 8: Impact of Predicted Traffic Changes to Kingaroy-Cooyar Road from Boonenne Timbers Additional Development

| Road Name | Annual Average Daily Traffic | Light Vehicles | Heavy Vehicles |
|---|---|---|---|
| Kingaroy-Cooyar Road – Two way traffic | 1065 | 926.55 (87%) | 127.8 (12.1%) |
| Additions vehicles from Boonenne Timbers development | +5.05 | +2 | +3.05 |
| % Increase in traffic volume | | + 0.215% | +2.4% |

If all additional light and heavy vehicular traffic to and from Boonenne Timbers were using the Dalby Kingaroy Road, this represents:

Table 9: Impact of Predicted Traffic Changes to Dalby-Kingaroy Road from Boonenne Timbers Additional Development

| Road Name | Annual Average Daily Traffic | Light Vehicles | Heavy Vehicles |
|---|---|---|---|
| Bunya Highway (Dalby-Kingaroy Road) – Two way traffic | 1108 | 810.94 (73.19%) | 297.05 (26.81%) |
| Additions due to Boonenne Timbers development | +5.05 | +2 | +3.05 |
| % Increase in traffic volume | | +0.25% | +1.03% |

Vehicular traffic resulting from increased production at Boonenne timbers is not greater than 5% of background traffic volumes.

## 4.1 State Controlled Road Intersection Suitability

State controlled road intersections impacted by the proposed development are:

- Kingaroy-Cooyar Road/Boonenne Road.
- Kingaroy-Cooyar Road/Aerodrome Road.
- Bunya Highway/ Aerodrome Road.

Impact to intersection traffic is considered negligible given the small increase in % volume from the additional development at Boonenne Timbers.

Approximate line of sight for these intersections are:

Table 10: Line of Sight at Intersections in Haul Route

| Intersection Description | Speed | Direction of Travel | Approximate Line of Sight (m) |
|---|---|---|---|
| Boonenne Road /Kingaroy-Cooyar Road | 100 km/hr | North | 600 |
| | | South | 400 |
| | | West | 1500 |
| Kingaroy-Cooyar Road/ Aerodrome Road | 100 km/hr | North | 1000 |
| | | South | 600 |
| | | West | 800 |
| Aerodrome Road / Bunya Highway | 100 km/hr | North | 1100 |
| | | South | 700 |
| | | East | 800 |
| | | West | 800 |

Photographs of these intersections are provided in ***Appendix A***

The route for heavy vehicles reduces the impacts on any residential areas and provides good visibility when entering and exiting intersections. It is also the NHVR approved B Double route. Accordingly, the existing intersections are considered as suitable for the additional development at Boonenne Timbers sawmill.

## 4.2 Pavement Impact Assessment of State Controlled Roads

The State Controlled Roads potentially impacted by an increase to Boonenne Sawmill operations are:

- Kingaroy - Cooyar Road.
- Bunya Highway (Dalby- Kingaroy).

Data for these controlled roads was accessed from the Queensland Government Open Data Portal *State controlled roads - Queensland - Dataset - Open Data Portal | Queensland Government* at the following locations:

Table 11 Location of State controlled Road Datasets

| Site ID | Road Name | Road Section ID | Latitude | Longitude | Distance to Boonenne Road Intersection (km) |
|---|---|---|---|---|---|
| 20210 | Kingaroy-Cooyar Rd | 419 | 26.70288922 | 151.8048634 | 10.67 |
| 20542 | Bunya Highway (Dalby Kingaroy Rd) | 45A | 26.61881842 | 151.7662184 | 2.342 |

### 4.2.1 Background Loading Units

Background loading units for each section of state-controlled road is calculated by review of the vehicle class and annual average daily traffic (S2.2.3 GTIA Practice note: PIA:2018) provides calculation of the background loading units for both roads as follows:

#### 4.2.1.a Kingaroy-Cooyar Road loads

Background loading units for annual average daily traffic (directional) for Kingaroy-Cooyar Road is calculated as:

Table 12: Kingaroy-Cooyar Road Background Loading Units

| Class | 1A Short Vehicles | 1B Rigid Truck or Bus | 1C Articulated Vehicles | 1D Road Trains | TOTAL LUs/day | Total LUs/year | Direction |
|---|---|---|---|---|---|---|---|
| Loading Unit Value for Class | 1 | 1.1 | 2.48 | 5.25 | - | - | - |
| Southbound Background with Gazettal | 486.465 | 31.878 | 21.6132 | 4.41 | 544.3662 | 198693 | Southbound |
| Northbound Background Against Gazettal | 449.604 | 85.833 | 27.85536 | 5.9535 | 569.24586 | 207774 | Northbound |

#### 4.2.1.b Bunya Highway (Dalby-Kingaroy Road)

Background loading units for annual average daily traffic (directional) for Dalby-Kingaroy Road is calculated as:

Table 13: Dalby-Kingaroy Road Background Loading Units

| Class | 1A Short Vehicles | 1B Rigid Truck or Bus | 1C Articulated Vehicles | 1D Road Trains | TOTAL LUs/day | Total LUs/year | Direction |
|---|---|---|---|---|---|---|---|
| Loading Unit Value for Class | 1 | 1.1 | 2.48 | 5.25 | - | - | - |
| Southbound Background with Gazettal | 364.908 | 146.35236 | 101.826816 | 131.1723 | 744.259476 | 271654 | Southbound |
| Northbound Background Against Gazettal | 446.1344 | 55.47168 | 52.480768 | 137.9448 | 692.031648 | 252591 | Northbound |

### 4.2.2 Calculation of Development Generated Traffic using SAR values

Following the methodology outlined in the Department of Transport and Main Road' Guide to Traffic Impact Assessment (GTIA), background data is compared with additional traffic generated from the increase in production at Boonenne Sawmill as follows:

#### 4.2.2.a Kingaroy-Cooyar Road

Using Table 3: SAR calculation by Aust Roads for heavy vehicle classification, unloaded and loaded SARs for Kingaroy-Cooyar Road on an annual basis for the additional vehicles from the development is presented in ***Table 15*** as follows :

Table 14: Directional SAR Calculation – Kingaroy Cooyar Road

| Truck Type | Type of Heavy vehicle | Direction | Loaded/ Unloaded | Number Trucks /day | SAR per vehicle | SAR per vehicle per day | SAR per year | Calculated SAR (loaded and unloaded) per year | Direction |
|---|---|---|---|---|---|---|---|---|---|
| Sawdust and Chip | 10 | With Gazettal (Southbound) | Unloaded | 0.28 | 0.53 | 0.15 | 55.12 | | |
| Sawn Product | 9 | With Gazettal (Southbound) | Unloaded | 0.57 | 0.51 | 0.29 | 106.08 | | |
| Log | 10 | With Gazettal (Southbound) | Loaded | 0.57 | 6.3 | 3.59 | 1310.40 | | |
| Fuel, firewood and potable water | 4 | With Gazettal (Southbound) | Loaded | 0.69 | 3.57 | 2.47 | 902.11 | 2373.71 | South bound |
| Log | 10 | Against Gazettal (Northbound) | Unloaded | 0.57 | 0.53 | 0.30 | 110.24 | | |
| Fuel,/ firewood / potable water | 4 | Against Gazettal (Northbound) | Unloaded | 0.10 | 0.5 | 0.05 | 18.00 | | |
| Sawdust and Chip | 10 | Against Gazettal (Northbound) | Loaded | 0.28 | 6.3 | 1.80 | 655.20 | | |
| Sawn Product | 9 | Against Gazettal (Northbound) | Loaded | 0.57 | 4.93 | 2.81 | 1025.44 | 1808.88 | North bound |

Comparison is made between background SARs on **Kingaroy Cooyar Road** with that of the additional development at Boonenne Timbers are presented in ***Table 16*** below:

Table 15: Assessment of Background with Proposed Development SAR4s

| SECTION 1 : Kingaroy - Cooyar Road | Background SAR_SAR4_PER_DAY | Development_SAR4_PER_DAY | % background |
|---|---|---|---|
| With Gazettal (Southbound) | 198693.66 | 2373.71 | 1.19 |
| Against Gazettal (Northbound) | 207774.74 | 1808.88 | 0.87 |

Given impact to the pavement is less than 5% increase of background SARs, reimbursement of impacts to pavement for **Kingaroy Cooyar Road** is not required.

### 4.1.2.b Bunya Highway (Dalby-Kingaroy Road)

Using Table 3: SAR4 calculation by Aust Roads for heavy vehicle classification, unloaded and loaded SARs for Dalby-Kingaroy Road on an annual basis for the additional vehicles from the development is therefore:

Table 16: Directional SAR Calculation - Dalby-Kingaroy Road

| Truck Type | Type of Heavy ehicle | Direction | Loaded/ Unloaded | Number Trucks /day | SAR per vehicle | SAR per vehicle per day | SAR per year | Calculated SAR (loaded and unloaded) per year | Direction |
|---|---|---|---|---|---|---|---|---|---|
| Sawdust and Chip | 10 | With Gazettal (Northbound) | Unloaded | 0.28 | 0.53 | 0.15 | 55.12 | | |
| Sawn Product | 9 | With Gazettal (Northbound) | Unloaded | 0.57 | 0.51 | 0.29 | 106.08 | | |
| Log | 10 | With Gazettal (Northbound) | Loaded | 0.57 | 6.3 | 3.59 | 1310.40 | | |
| Fuel, firewood and potable water | 4 | With Gazettal (Northbound) | Loaded | 0.69 | 3.57 | 2.47 | 902.11 | 2373.71 | North bound |
| Log | 10 | Against Gazettal (Southbound) | Unloaded | 0.57 | 0.53 | 0.30 | 110.24 | | |
| Fuel,/ firewood / potable water | 4 | Against Gazettal (Southbound) | Unloaded | 0.10 | 0.5 | 0.05 | 18.00 | | |
| Sawdust and Chip | 10 | Against Gazettal (Southbound) | Loaded | 0.28 | 6.3 | 1.80 | 655.20 | | |
| Sawn Product | 9 | Against Gazettal (Southbound) | Loaded | 0.57 | 4.93 | 2.81 | 1025.44 | 1808.88 | South bound |

Comparison is made between background SARs on **Dalby-Kingaroy Road** with that of the additional development at Boonenne Timbers below:

Table 17: Assessment of Background with Proposed Development SAR4s

| SECTION 2 : Dalby- Kingaroy | Background SAR_SAR4_PER_DAY | Development_SAR4_PER_DAY | % background |
|---|---|---|---|
| Against Gazettal (South bound) | 271654.71 | 1808.88 | 0.67 |
| with Gazettal (North bound) | 252591.55 | 2373.71 | 0.94 |

Given impact to the pavement is less than 5% increase of SARs, reimbursement of impacts to pavement for **Dalby-Kingaroy Road** is not required.

As requested in the SARA Information Request, this additional information will be provided to SARA through MyDAS2.

We look forward to receiving DES's acceptance of the information provided and confirmation that an Environmental Authority will be issued for ETK Enterprises Pty Ltd for ERA 47(b).

With thanks in advance of your consideration of this matter.

Respectfully Submitted

Yours Sincerely

Paul Anderson

Director IMEMS Pty Ltd

# 5 REFERENCES

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Queensland Government, *Environmental Protection Act 1994.*

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Queensland Government, (2023). *Wetland Info, Management, Treatment Systems, For Agriculture, Treatment System Options, Sediment Basins*. Online: *https://wetlandinfo.des.qld.gov.au/wetlands/management/treatment-systems/for-agriculture/treatment-sys-nav-page/sediment-basins/planning-design.html*

# Appendix 1: SARA INFORMATION REQUEST – 6th February 2024

SARA reference: 2401-38585 SRA
Applicant reference: 11574K
Council reference: MCU23/0034

6 February 2024

IMEMS Pty Ltd
c/- ONF Surveyors
PO Box 896
KINGAROY QLD 4610
admin@onfsurveyors.com.au

Dear Sir/Madam

# SARA Information Request—157 Boonenne Road, Goodger

(Given under section 12 of the Development Assessment Rules)

This notice has been issued because the State Assessment and Referral Agency (SARA) has identified that information necessary to assess your application against State code 6: Protection of state transport networks (State code 6) and State code 22: Environmentally relevant activities (State code 22) of the State Development Assessment Provisions (SDAP) has not been provided.

| **Air Impacts** | |
|---|---|
| 1. | **Issue:**<br>Insufficient information has been provided for SARA to determine how the proposed development complies with Performance Outcome (PO) 2 of State code 22 of SDAP and the Environmental Protection (Air) Policy 2019. In particular, the proposed development is located within 500 metres of sensitive receptors (to the North, North-West and South) and air modelling has not been provided to demonstrate how the proposed development manages Particulate Matter (PM) 2.5 and PM10.<br><br>**Action:**<br>Provide air modelling which includes:<br>• Identification of any point source emissions (e.g. generators, cyclones and vents) on the development site with the following detail:<br>o a table that identifies each point source, its height, minimum efflux velocity and the contaminants proposed to be monitored<br>o the concentration (minimum, average, maximum) of the contaminants provided for each release point (i.e. mg/Nm3) as well as the relevant percentage correction for oxygen (where applicable). |



Wide Bay Burnett regional office
Level 1, 7 Takalvan Street, Bundaberg
PO Box 979, Bundaberg QLD 4670

| | |
|---|---|
| | • Assessment of whether the proposed development can comply with the air quality objectives within the Environmental Protection (Air) Policy 2019 at all sensitive receptors (commercial and residential).<br>• Demonstration that the proposed development can comply with the Common Conditions – Prescribed Environmentally Relevant Activities (ESR/2015/1828). In particular, PCA003 for PM2.5 and PM10 emission limits. |
| **Stormwater Impacts** | |
| 2. | **Issue:**<br>Insufficient information has been provided for SARA to determine how the proposed development complies with PO4 of State code 22 of SDAP and the Environmental Protection (Water and Wetland Biodiversity) Policy 2019. In particular, how stormwater from the proposed development will be managed.<br><br>**Action:**<br>Provide the following stormwater management information:<br>• Identification of potential and expected sources of stormwater contaminants (e.g. sawdust, chemicals used on the site.<br>• How stockpiles will be managed to avoid stormwater contamination.<br>• Confirmation that stormwater treatment and retention measures have capacity to retain stormwater runoff from disturbed areas generated by a rainfall event up to and including a 24 hour rainfall event with an Annual Exceedance Probability (AEP) of 10%. Evidence to demonstrate this mist include relevant engineering drawings, diagrams or documentation, prepared by a suitably qualified person.<br>• A map with GPS co-ordinates (Latitude and Longitude) in GDA2020 that identifies all discharge locations from the stormwater basin.<br>• Details of the treatment method used to treat the captured stormwater contaminated by the proposed development.<br>• Details of the expected water quality of treated water.<br>• The proposed monitoring frequency and targeted water quality parameters.<br>• Water quality limits that are suitably justified to protect the existing environmental values of receiving land using the template in **Attachment 1**. |
| **Traffic Impacts** | |
| 3. | **Issue:**<br>Insufficient information has been provided for SARA to determine how the proposed development complies with PO1, PO3 and PO6 of State code 6 of SDAP.<br><br>**Action:**<br>Provide a Traffic Impact Assessment, prepared in accordance with the Department of Transport and Main Roads' *Guide to Traffic Impact Assessment (GTIA)*, that includes:<br>• The number, type, and frequency of vehicles that service the existing use on the development site.<br>• The number, type and frequency of new vehicles that will be generated by the proposed development, including:<br>o the number and type of loaded (sawn log) vehicles entering the site/day |

| | |
|---|---|
| | ▪ the number and type of unloaded logging vehicles leaving the site/day<br>▪ the number and type of unloaded vehicles arriving to the site to collect manufactured timbers/day<br>▪ the number and type of loaded vehicles with manufactured timbers leaving the site/day<br>▪ the number and type of private staff trips to the site<br>▪ the number, type, and frequency of service/delivery vehicles not already captured in the haul vehicle types referenced above<br>▪ shift start and end times for the proposed development<br>▪ confirmation of operational days and times per year.<br>o The distribution of trips generated by the proposed development to the state-controlled road network.<br>o Identification of the commonly used haul routes for all vehicle types identified above.<br>o An assessment of the suitability of intersections on the state-controlled road network that are impacted by traffic generated by the development, such as the Kingaroy-Cooyar Road/Boonenne Road intersection and the Bunya Highway/Boonenne Ellesmere Road intersection.<br>o A Pavement Impact Assessment in accordance with section 13 of the GTIA. Where an increase of greater than 5% is identified on road segments, identify the value of pavement impact contributions required. |

**How to Respond**

You have three months to respond to this request and the due date to SARA is **7 May 2024.**

You may respond by providing either: (a) all of the information requested; (b) part of the information requested; or (c) a notice that none of the information will be provided. Further guidance on responding to an information request is provided in section 13 of the Development Assessment Rules (DA Rules).

It is recommended that you provide all the information requested above. If you decide not to provide all the information requested, your application will be assessed and decided based on the information provided to date.

You are requested to upload your response and complete the relevant tasks in MyDAS2.

As SARA is a referral agency for this application, a copy of this information request will be provided to the assessment manager in accordance with section 12.4 of the DA Rules.

If you require further information or have any questions about the above, please contact Cavannah Deller, Senior Planning Officer, on 07 3244 9343 or via email WBBSARA@dsdilgp.qld.gov.au who will be pleased to assist.

Yours sincerely

Luke Lankowski
Manager, Planning – Wide Bay Burnett

cc South Burnett Regional Council, info@sbrc.qld.gov.au

| **Development Details** | |
|---|---|
| Description: | Development Permit Material Change of Use for high Impact Industry (Sawmill) and Concurrent ERA 47 – Timber Milling and Wood Chipping |
| SARA Role: | Referral Agency |
| SARA Trigger: | • Schedule 10, Part 5, Division 4, Table 2, Item 1 (10.5.4.2.1) of the Planning Regulation 2017 – Environmentally Relevant Activity (ERA)<br>• Schedule 10, Part 9, Division 4, Subdivision 1, Table 1, Item 1 (10.9.4.1.1.1) of the Planning Regulation 2017 – Development impacting on State transport infrastructure |
| SARA Reference: | 2401-38585 SRA |
| Assessment Criteria: | State code 6 and State code 22 of SDAP |

# Appendix 2: PHOTOGRAPHS OF HAUL ROAD INTERSECTIONS

# Kingaroy-Cooyar Road / Aerodrome Road intersection

Photograph 1 Kingaroy-Cooyar Road / Aerodrome Road intersection - Facing South towards Cooyah

Photograph 2 Kingaroy-Cooyar Road / Aerodrome Road intersection - Facing North towards Kingaroy


Photograph 3 Kingaroy-Cooyar Road / Aerodrome Road intersection - Facing West towards Aerodrome Road

## Kingaroy-Cooyar Road / Boonenne Road intersection

Photograph 4 Kingaroy-Cooyar Road / Boonenne Road intersection - Facing south towards Cooyar

Photograph 5 Kingaroy-Cooyar Road / Boonenne Road intersection - Facing north towards Kingaroy

Photograph 6 Kingaroy-Cooyar Road / Boonenne Road intersection - Facing west towards Boonenne Road

## Bunya Highway / Aerodrome Road intersection

Photograph 7 Bunya Highway / Aerodrome Road intersection - Facing north towards Kingaroy

Photograph 8 Bunya Highway / Aerodrome Road intersection - Facing west towards Burrandowan

Photograph 9 Bunya Highway / Aerodrome Road intersection - Facing South towards Dalby

Photograph 10 Bunya Highway / Aerodrome Road intersection - Facing east towards Aerodrome Road

PSA Consulting Pty Ltd ABN 83 109 836 197
T + 61 7 3220 0288 W psaconsult.com.au
**Brisbane (Head Office)** L20 / 127 Creek Street, Brisbane / Meeanjin Qld 4000
PO Box 10824 Adelaide Street Brisbane Qld 4000

10 December 2024

Boonenne Timbers – Andrew & Elizabeth Keenan
C/- IMEMS Pty Ltd
PO Box 411
Palmwoods, QLD 4555

Dear Paul Anderson,

**RE: TRAFFIC ENGINEERING RESPONSE TO PUBLIC / FURTHER SUBMISSION BY REVOLUTION TOWN PLANNING FOR DEVELOPMENT APPLICATION MCU23/0034**

## Introduction

PSA Consulting (PSA) has been engaged by Boonenne Timbers C/- IMEMS Pty Ltd to provide a traffic engineering response to *Submission to a Development Application under Section 53 (6) of the Planning Act 2016 and Section 19 of the Development Assessment Rules, under the Planning Act 2016, Section 68* by Revolution Town Planning on 14 June 2024.

This technical letter was prepared specifically in response to *Ground 3 – The proposed development will unduly adversely impact the safety and efficiency of the road network, including both the State and Local Road Network* of the reasons for refusal of the Development Application (MCU23/0034 ) for a Development Permit for a High Impact Industry and ERA 47 – Timber Milling and Woodchipping at 157 Boonenne Road in Goodger. The documents reviewed include the following:

- Development Assessment Report (dated October 2023 prepared by ONF Surveyors)
- Response to SRBC Information Request (dated 14 May 2024 prepared by ONF Surveyors)
- Response to Further Submission (dated 07 August 2024 prepared by ONF Surveyors)
- Changed Referral Agency Response – with Conditions (dated 30 September 2024 – SARA Reference 2401-38585 SRA)
- B-Double Authorisation Permit (dated 29 April 2024 from NHVR)
- Public / Further Submission (dated 14 June 2024 prepared by Revolution Town Planning)

## Public Submission

The following is an excerpt from the public submission by Revolution Town Planning in regard to the Development Application (MCU23/0034) for a Development Permit for a High Impact Industry and ERA 47 – Timber Milling and Woodchipping:

*At the outset, we note that the calculation of development generated traffic provided by the Applicant does not follow any logic. The Applicant contends that the current timber throughput at the sawmill is less than or equal to 5,000 tonnes per year and that for this throughput an average of five (5) heavy vehicles and 42 light vehicles (6 day working*

*week) (94 vehicle trips) attend the site per week together with a few incidental monthly vehicle movements. Where timber throughput at the sawmill is proposed to quadruple to a maximum of 20,000 tonnes of timber per year, development generated traffic is only predicted to result in an additional 10 heavy vehicles and an additional light vehicle (an additional 22 vehicle trips in total) attending the site each week. Both the calculation of existing development traffic and the assumed increase in development traffic is nonsensical.*

*Firstly, it is stated in the development application that the sawmill employees 13 staff. This assumes an occupancy rate of 1.85 persons per vehicle. While, it may be the case that not all staff will be working on the site at any one time, where shifts or starting times are staggered additional light vehicle movements will result. However, there will likely be crossovers at changes of shifts and the like. In any case, images in Appendix A of the Town Planning Report show nine (9) light vehicles parked in the staff 'carparking area'. Further, the Applicant is asking it to be believed that a quadrupling of the allowable throughput at the sawmill will require only two (2) (rounded up) additional staff members to be employed. Either the existing 13 staff are working well under capacity (which makes one consider why thirteen (13) staff are employed at the site), or the sawmill is currently processing more than 5,000 tonnes of timber in a year or the two (2) additional staff members employed if the increase in the maximum allowable throughput is approved share DNA with Eugene 'Flash' Thompson (The Flash) of Marvel Comic fame.*

*The reasons why the traffic generated by the development has been calculated as it has been in the technical reports supporting the development application must be justified by the Applicant. However, regardless of whether the Applicant is able to support the development generated traffic calculations provided with logical and well-reasoned information, Boonenne Road and its connections to the surrounding road network are not suitable to carry the number and types of vehicles generated by the development.*

*No description of the existing road environment has been provided. Further, no assessment of the suitability of the existing vertical and horizontal geometry of Boonenne Road and its intersections with the state-controlled road network to carry development generated traffic has been undertaken. The composition of the existing Boonenne Road pavement and the impact of development generated traffic on the pavement is also unknown. Boonenne Road also functions as a school bus route and this is not mentioned in the development application material. Refer Attachment 2 for photos of Boonenne Road approximately 175m west of the proposed access to the development.*

*As shown in the photos contained in Attachment 2 Boonenne Road varies in width and formation. However, generally Boonenne Road has a 4m wide gravel pavement with 0.5 gravel shoulder. The road is neither formed nor has shoulders along the entire length of the road. The level of the road is also variable with access to the proposed development located on the eastern side of a crest. Five (5) dwellings associated with rural uses gain access from Boonenne Road.*

*Without traffic generated by the development, Boonenne Road likely carries approximately thirty-five (35) vehicle trips per day (seven (7) per dwelling), almost 100% of those trips being light vehicles. Using the calculations provided by the Applicant (which we maintain are nonsensical) vehicle trips per day with the sawmill; operating at its maximum intensity, average daily vehicle trips increase to approximately fifty-three (53), two (2) of which are heavy vehicle movements. As above, it is considered the projected development generated traffic will be significantly greater than this where sawmill throughput is equal to 20,000 tonnes of timber per year.*

*Using the Applicant's existing traffic data (10) heavy vehicle per week and 14 light vehicle trips per day) as the base scenario and assuming staff numbers increase from 13 to 20, it is considered likely traffic where the throughput of the sawmill is at 20,000 tonnes per year will equal approximately forty (40) heavy vehicle trips/week and twenty (20) light vehicle trips per day. Assuming a six (6) day working week, this equates to 27 vehicle trips/day, approximately one quarter of which are heavy vehicle trips (seven (7)). This would bring average daily traffic on Boonenne Road to sixty-two (62) vehicle trips per day, a 60% increase in overall traffic on Boonenne Road. Heavy vehicle trips would comprise of 11% of all vehicle trips on Boonenne Road. With reference to any well-regarded standard for road design, the existing road geometry and the construction standard of Boonenne Road is not suitable for the traffic likely to be generated by the development.*

*The IPWEA Lower Order Road Design Guideline, specifies a 6m wide pavement (4m wide asphalt seal) on a 7m wide formation (0.5m wide unsealed shoulders) for the projected development generated traffic. Austroads Road Design Guidelines specifies (with consideration for the type of vehicles generated by the development) a 6m wide asphalt sealed pavement on an 8m wide formation (1m wide unsealed shoulders). Both standards require dedicated school bus set-down/pick-up areas to be provided.*

*The design of the intersection of Boonenne Road with the Bunya Highway and Kingaroy Cooyar Road also must be considered. As shown in the images of the intersections in Attachment 2, the existing road geometry does not accommodate the turning movements of heavy vehicles associated with the use and no acceleration or deceleration lanes or Basic Right Turn treatments are provided at either intersection. Vehicle swept paths through both intersections and entering and exiting the site access must be provided to enable a thorough assessment of the suitability of the intersections and the site access.*

*In relation to heavy vehicle access to the site, the application material mentions a NHVR Permit for access to Boonenne Road. A search of the NHVR route planner and network map indicates that Boonenne Road is not a gazetted heavy vehicle route and access and use of the road by heavy vehicle requires approval. The mapping does not indicate such an approval exists for Boonenne Road. The Applicant should provide a copy of the NHVR approval.*

*Lastly, it is noted that the proposed development has not demonstrated that the provisions of the South Burnett Planning Scheme listed below have been satisfied and insufficient information has been provided to enable reasonable and relevant conditions to be imposed to ensure the provisions will satisfied:*

- *PO5 of the Services and works code 'Development is provided with infrastructure which: (a) conforms with industry standards for quality; (b) is reliable and service failures are minimised; and (c) is functional and readily augmented'.*
- *PO6 of the Services and works code 'Vehicle parking and access is provided to meet the needs of occupants, employees, visitors and other users'.*
- *Part 6.2.8.2 (2) (d) 'Development maximises the use of existing transport infrastructure and has access to the appropriate level of transport infrastructure but does not compromise the efficiency of the local and state-controlled Road network'.*
- *Part 6.2.8.2 (2) (n) 'Activities generating high volumes of traffic, particularly heavy vehicle traffic, are located in areas having direct access to the major road network or access other than through residential areas or other sensitive receptors'.*

## Response to Public Submission

**Trip Generation and Impact to Surrounding Road Network**

The development currently generates 10 heavy vehicle trips per week (5 incoming, 5 outgoing) and 14 light vehicle trips per day (7 incoming, 7 outgoing). The proposal aims to increase the production of the development from less than 5,000 tonnes per year of timber to 16,000 tonnes per year of timber. In exceptional circumstances, such as natural disaster, unprecedented weather events, or upon directive from statutory authorities, an additional 4, 000 tonnes may be processed in surplus.

With the proposed increase in production, the development is expected to generate an additional 20 heavy vehicle trips per week (10 incoming, 10 outgoing) and 2 light vehicle trips per day (1 incoming, 1 outgoing). The Public / Further Submission, dated 14 June 2024 prepared by Revolution Town Planning, noted that the development trip generation does not follow any logic.

The Response to SRBC Information Request, dated 14 May 2024 prepared by ONF Surveyors, indicated that the introduction of technology into the production process requires only 2 additional employees. This suggests that the development is streamlining its production process rather that increasing its manpower, which is considered to be reasonable given the increases in technology in the years since the opening of the existing timber mill . Nonetheless, for the purpose of undertaking a more conservative analysis, the trip generation has been adjusted proportionately to the increase in production. Table 1 outlines the daily vehicle trips during current and proposed operations.

**Table 1: Development Trip Generation (Source: ONF Surveyors, PSA)**

| TYPE | EXISTING OPERATION | PROPOSED OPERATION |
|---|---|---|
| Production | <5, 000 tonnes | 20, 000 tonnes |
| Heavy Vehicle | 2 vpd<br>(averaged over 10 per week) | 8 vpd<br>(averaged over 20 per week) |
| Light Vehicle | 14 vpd | 28 vpd |

Table 1 indicates that the development will generate 8 heavy vehicle and 28 light vehicle trips per day, totalling 36 vehicles per day.

It is proposed that a maximum of 2-3 truck movements will be B-Doubles per week, while the remaining heavy vehicle movements will be semi-trailers or rigid vehicles.

The annual average daily traffic (AADT) of Bunya Highway and Kingaroy Cooyar Road was sourced from TMR Open Data Portal and outlined in Table 2 for the year 2023.

**Table 2: State-Controlled Road Volumes (Source: ONF Surveyors, PSA)**

| ROAD | DIRECTION | AADT |
|---|---|---|
| Bunya Highway | Anti-Gazettal | 578 |
| | Gazettal | 566 |
| Kingaroy Cooyar Road | Anti-Gazettal | 664 |
| | Gazettal | 643 |

According to Austroads Guide to Traffic Management Part 3: Transport Study and Analysis Methods, two-lane two-way road has a capacity of 1700 vehicles per hour as per Highway Capacity Manual. Considering this, both Bunya Highway

and Kingaroy Cooyar Road have sufficient capacity to accommodate additional traffic from the development. The additional trips generated by the development are under 3% of the volumes on the two roads.

**Boonenne Road Design**

Based on IPWEA Lower Order Road Design Guideline, a road can be classified as minor road (50 – 160 vpd) if two of the criteria are met:

- Connectivity between Local Roads of significance or state-controlled roads;
- Access to 20 to 50 properties; and
- Potential for commercial trip generation

Boonenne Road connects to both state-controlled roads, Bunya Highway and Kingaroy Cooyar Road. Moreover, the development is a commercial development. Therefore, Boonenne Road can be classified as minor road. It should be noted that Boonenne Road only services 5 residential dwelling and the development. Considering the 35 trips per day generated by the other 5 residential dwellings along Boonenne Road (at an approximate 10 trips per day), the total number of vehicles travelling along Boonenne Road is conservatively 71 trips per day.

According to IPWEA Lower Order Road Design Guideline, a minor road can be either sealed or unsealed depending on local sealing programs and priorities and therefore, sealing the road is not considered a necessary treatment.

Based on Table 1 – Road Asset Classification: Desirable Characteristics, Features and Values of IPWEA Lower Order Road Design Guideline, the required formation width for a minor road is 6.5m, with a 7.0m width required if there are more than 10 heavy vehicles per day. As Boonenne Road will carry only up to 8 heavy vehicles per day, a 6.5m formation width is deemed suitable. Boonenne Road currently has a 6.5m formation width and therefore no further mitigation measures is deemed necessary. Table 3 outlines the characteristics of a local minor road compared to Boonenne Road.

**Table 3: Minor Road vs Boonenne Road Characteristics (Source: IPWEA, PSA)**

| CRITERIA | MINOR ROAD | BOONENNE ROAD |
|---|---|---|
| Vehicles per Day | 50 vph – 150 vph | 68 vph |
| Road Type | Sealed or Unsealed | Unsealed |
| Formation | 6.5 m | 6.5 m |
| Access to Property | 20 – 50 properties | 6 properties |

Table 3 indicates that Boonenne Road can accommodate additional traffic from the development and would still be suitable for its purpose.

Based on a desktop assessment, Boonenne Road is a straight road with minimal changes in elevation. This provides adequate sight distance for both horizontal and vertical views, allowing vehicles to perceive oncoming vehicles, and therefore no further measures are deemed necessary. A turn warrant assessment has been undertaken at the Kingaroy Cooyar Road / Boonenne Road intersection as shown in Figure 1. It should be noted that it has been assumed that 10% of the AADT and development traffic occurs during peak hours.

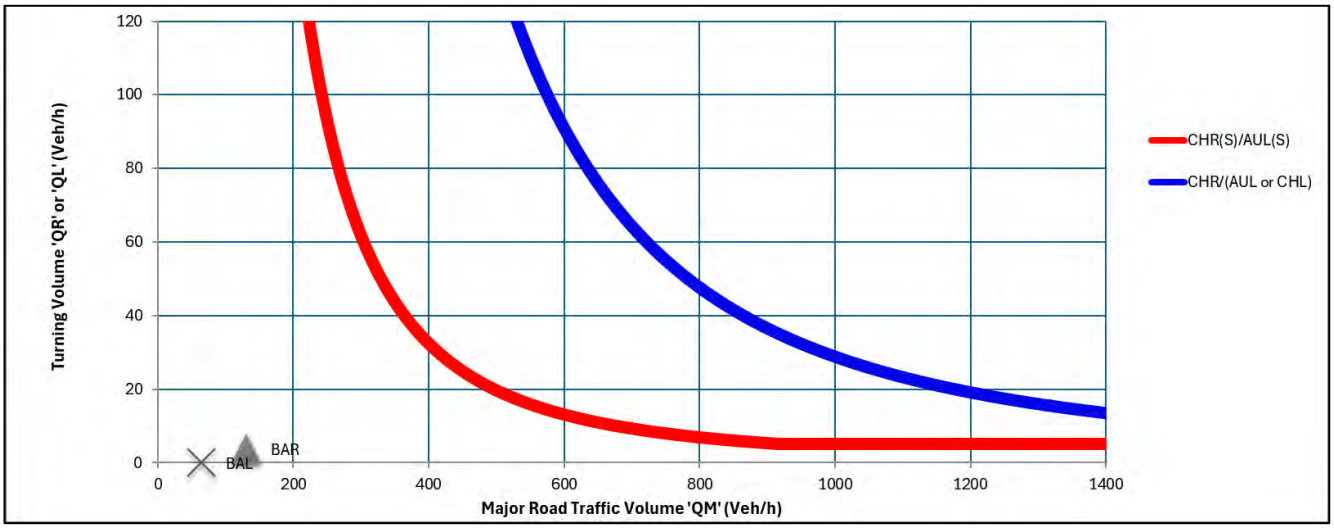



**Figure 1: Kingaroy Cooyar Road intersection Turn Warrant Assessment**

Turn warrant assessment indicates that a Basic Right Turn (BAR) Treatment and Basic Left Turn (BAL) Treatment are required to accommodate development traffic. The existing road geometry can accommodate these turn treatments and therefore no further mitigation measures is deemed necessary. A swept path analysis has been conducted at site access and the Kingaroy Cooyar Road / Boonenne Road intersection to demonstrate that a B-Double vehicle can access these roads without experiencing any conflicts. Full swept path analysis is attached in Appendix 1.

### Bus Route and Stop along Boonenne Road

No formal bus route is currently servicing Boonenne Road. According to Response to Further Submission, dated 07 August 2024 prepared by ONF Surveyors, while the bus company does not publicly provide bus routes, the pickup point for local school children is at the intersection of Boonenne Road and Boonenne Ellesmere Road. Occasionally, the bus driver may drop children off at the operator's land as a courtesy, but Boonenne Road is not a regular or formal bus route. Therefore, no improvements are required to accommodate the school bus travelling along Boonenne Road.

### Parking Provision

The SBRC Planning Scheme nominates minimum parking rates for an "Industry" Use as 1 space/50sqm GFA for the first 500m$^2$, then 1 space per 100sqm GFA thereafter + and AV (Articulated Vehicle) space. It should be noted that the development will only increase its production, with no increase in GFA expected. Therefore, no additional parking provision is required. Nonetheless, the development site has sufficient space to accommodate any additional parking demand.

### B-Double Authorisation Permit

It has been noted that Boonenne Road is not part of the B-Double Route Network. However, a B-Double Authorisation Permit has been granted by the NHVR for the development, allowing heavy vehicles to use Boonenne Road until 06 July 2025. The B-Double Authorisation Permit is included in Appendix 2.

It is proposed that a maximum of 2-3 truck movements will be B-Doubles per week, while the remaining heavy vehicle movements will be semi-trailers or rigid vehicles.

## Summary

In summary, based on a review of the Development Application (MCU23/0034 ) for a Development Permit for a High Impact Industry and ERA 47 – Timber Milling and Woodchipping at 157 Boonenne Road in Goodger including the DA report, Response to SBRC Information Request, Response to Further Submission, Referral Agency Response and Further Submission, the development trips generated by the proposed increase in development are not expected to have an adverse impact on the road network in the vicinity of the site. No further mitigation measures are necessary as a result of the development.

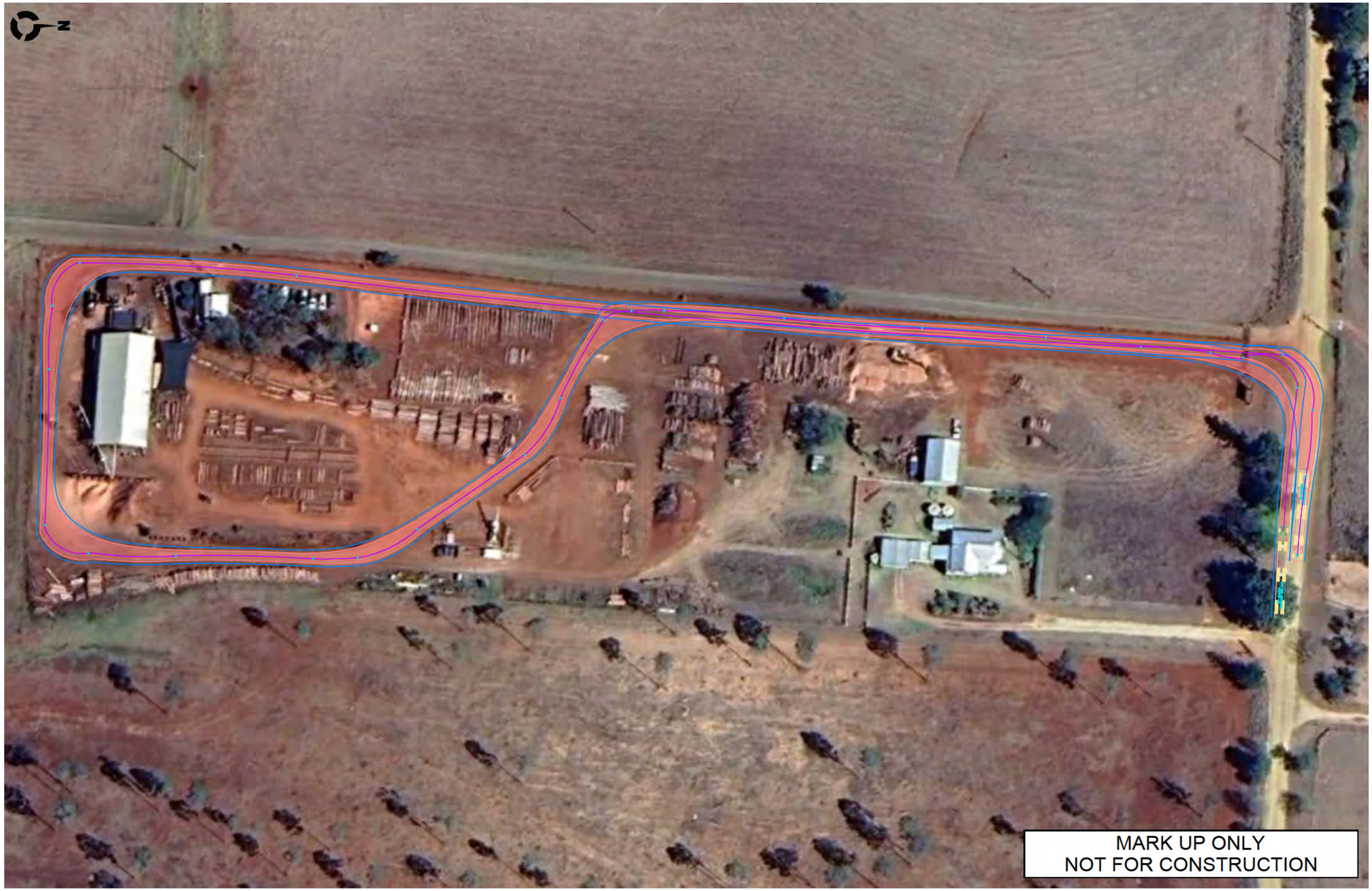
I trust the above meet your requirements. If you have any questions, please don't hesitate to contact the undersigned.

Yours sincerely

Hannah Richardson
RPEQ 17016
**Director, Traffic and Transport Engineering**
**PSA Consulting (Australia) Pty Ltd**

| VERSION | DATE | DETAILS | AUTHOR | AUTHORISATION |
|---|---|---|---|---|
| V2 | 10 December 2024 | Letter Advice | Daina Ruth Aliboso |  Hannah Richardson |

## APPENDIX 1 - SWEPT PATH ANALYSIS




| REVISION | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 1 | ORIGINAL ISSUE | D.A | 05.12.2024 |

PSA CONSULTING

Telephone: 07 3220 0288
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TOWN PLANNING | TRAFFIC ENGINEERING | TRANSPORT PLANNING | PROGRAM MANAGEMENT | INFRASTRUCTURE



DRAWING TITLE: SWEPT PATH ANALYSIS - SITE ACCESS MANOEUVRE
CLIENT: ONF SURVEYORS
PROJECT: RESPONSE TO PUBLIC/FURTHER SUBMISSION
LOCATION: 157 BOONENNE ROAD, GOODGER QLD 4610

| | | | |
|---|---|---|---|
| DRAWING DATE | DECEMBER 2024 | DRAWN BY | D.A |
| ORIGINAL SIZE A1 SCALE A3: | 1:1000 | CHECKED BY | H.R |
| SCALE | 0 10 20 30m<br>SCALE 1:500 (A1) | APPROVED BY | H.R (RPEQ: 17016) |

| PROJECT NO. | DRAWING NO. | REVISION |
|---|---|---|
| 1860 | SK01 | 1 |


| REVISION | DESCRIPTION | BY | DATE |
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| 1 | ORIGINAL ISSUE | D.A | 05.12.2024 |

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Website: www.psaconsult.com.au


DRAWING TITLE: SWEPT PATH ANALYSIS - ENTERING TO BOONENNE ROAD
CLIENT: ONF SURVEYORS
PROJECT: RESPONSE TO PUBLIC/FURTHER SUBMISSION
LOCATION: 157 BOONENNE ROAD, GOODGER QLD 4610

DRAWING DATE: DECEMBER 2024
ORIGINAL SIZE: A1 SCALE A3: 1:300
SCALE: 0 2 4 6 8 9m
SCALE 1:150 (A1)

| | |
|---|---|
| DRAWN BY | D.A |
| CHECKED BY | H.R |
| APPROVED BY | H.R (RPEQ: 17016) |

| PROJECT NO. | DRAWING NO. | REVISION |
|---|---|---|
| 1860 | SK02 | 1 |


| REVISION | DESCRIPTION | BY | DATE |
|---|---|---|---|
| 1 | ORIGINAL ISSUE | D.A | 05.12.2024 |

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Website: www.psaconsult.com.au


DRAWING TITLE: SWEPT PATH ANALYSIS - EXITING TO BOONENNE ROAD
CLIENT: ONF SURVEYORS
PROJECT: RESPONSE TO PUBLIC/FURTHER SUBMISSION
LOCATION: 157 BOONENNE ROAD, GOODGER QLD 4610

DRAWING DATE: DECEMBER 2024
ORIGINAL SIZE: A1 SCALE A3: 1:300
SCALE: 0 2 4 6 8 9m
SCALE 1:150 (A1)

| | |
|---|---|
| DRAWN BY | D.A |
| CHECKED BY | H.R |
| APPROVED BY | H.R (RPEQ: 17016) |

| PROJECT NO. | DRAWING NO. | REVISION |
|---|---|---|
| 1860 | SK03 | 1 |

## APPENDIX 2 - NHVR B-DOUBLE AUTHORISATION PERMIT

NHVR
National Heavy Vehicle Regulator

**Permit number**
191903V10

# B-Double Authorisation Permit

**Heavy Vehicle National Law**
This Permit is issued under the provisions of *Section 143 of the Heavy Vehicle National Law* for the operation of a Class 2 vehicle *(as defined in this Permit)* subject to the conditions set out in this Permit and any attachments.

## Permit details

This Permit is issued to

JOHNSTON FAMILY TRUST t/a BULK GRANITE HAULAGE

Address

LOT 1 OLD TOORBUL POINT RD
CABOOLTURE, QLD 4510

Type

B-Double

Vehicle configuration and description

B-Double
Combination (up to 9 axles)

**Permit period**

| Start date | End date |
|---|---|
| 07-Jul-2024 | 06-Jul-2025 |

*continued on next page...*

**Permit number**
191903V10

## Vehicle details

*GCM must not exceed manufacturer's specifications*

**Vehicle dimensions**

Length
Up to 25m/26m

Height
Up to 4.3m

Freight type
Commodity

Description of load
Commodity - Bulk Goods, Mulch, General Freight

*continued on next page...*

## Authorised Routes

Turn by turn description

191903r4v7 - Area

1) Start: Approved B-Double Network, W Dapto Rd, Kembla Grange NSW 2526
Wyllie Rd, Kembla Grange
End: 50 Wyllie Rd, Kembla Grange NSW 2526

191903r5v7 - Area

1) Start: Approved B-Double Network, Bruce Hwy, Childers QLD 4660
Goodwood Rd, [Childers – Goodwood]
End: Intersection of Goodwood Rd and Frestas Rd, Goodwood QLD 4660

191903r6v4 - Area

1) Start: Boonenne Timbers, 156 Boonenne Rd, Taabinga QLD 4610
Boonenne Rd, Taabinga
Kingaroy Cooyar Rd, Taabinga
End: Approved B-Double network, Kingaroy Cooyar Rd, Taabinga QLD 4610

## Road conditions

### Regulator

(1) GO03 -

You may be required under another law to obtain consent or approval from a Third Party entity.

These approvals must be carried and produced on request by an authorised officer. In this section Third Party entity usually include the following -

(a) police especially with respect to the movement of vehicles which exceed dimension requirements due to the potential risks to other road users and possible need for police assistance to control traffic

(b) rail infrastructure managers the movement of oversize/overmass heavy vehicles across level crossings or restricted access vehicles near rail infrastructure may create risks that need to be managed

(c) utilities restricted access vehicles may have adverse effects on utilities infrastructure with over height vehicles and telecommunications/power lines being a common concern

(d) private road owners allowing public access toll roads, ports, airports, hospitals and private estates are potential examples where those road owners, who may not be road managers for the purpose of the HVNL, also need to grant consent to the use of restricted access vehicles

(e) forestry agencies roads owned by governmental agencies can possess different characteristics that may pose risks not found on typical roads and if the government agency is not a road manager for the purpose of the HVNL may require special consideration to manage risks arising from the use of restricted access vehicles on these roads.

### South Burnett Regional Council

(1) RI01 - Weather and road access -

(1) On unsealed roads and single lane narrow roads, travel is suspended during periods of prolonged rain and up

to 1days for every 5mm of rain within the 24 hours period after the rainfall event. (i) When a prolonged rainfall event occurs, the restriction is applied to allow sufficient time for the road and road pavement to dry preventing damage.

(2) Access maybe further restricted or deferred in the event of a significant rainfall event. Contact must be made with the relevant traffic management information sources on such an occasion.

In this section -

"unsealed roads" means routes accessible by vehicles that are not sealed, or are not metalled, or are gravel roads

"single lane narrow road" means a road that permits two-way travel but is not wide enough in most places to allow vehicles to pass one another without travelling on unsealed shoulders

"prolonged rain" means periods of sustained rainfall that can also lead to flooding

"a significant rainfall event" means periods of constant or excessive rainfall that can also lead to flooding

(2) RI10 - Heavy vehicle movement - Report of Damage

In the event that the permitted heavy vehicle damages assets or infrastructure, contact must be made with James D'Arcy of Manager Infrastructure Planning via (07) 4189 9100 with receipt of the advised damage from the road manager.

A written statement of the damage must be recorded and provided in writing to the road manager prior to repairs of the damaged infrastructure or asset.

(3) RS03 - Speed Restriction - Road

The heavy vehicle is restricted to a maximum speed limit of 70 kph when travelling on Boonenne Road, except where a traffic sign indicates a lower speed limit.

(4) SBC4 - The operator is to ensure that travel along the consented roads, in particular the navigation around bends/curves, dips/depressions and crests, roundabouts intersections and grids are undertaken with extreme care at speeds that are safe/ adequate for the road condition at the time of travel.

## Travel conditions

### Department of Transport and Main Roads (TMR)

(1) RI16 - On Goodwood Road the driver must end journey at Frestas Road. Full length of Goodwood Road is NOT Permitted..

## Vehicle conditions

### Regulator

(1) LE07 - The driver and operator of the B-double must comply with all conditions, except conditions relating to stated routes or networks, set out in the National Class 2 Heavy Vehicle B-double Authorisation (Notice) including the schedule for a participating jurisdiction when the vehicle is being used in the jurisdiction to which that schedule applies.

(2) LE12 - A B-double may be up to 26.0m long provided the vehicle meets Schedule 6 Section 3 (3) of the Heavy Vehicle (Mass, Dimension and Loading) National Regulation.

(3) LEOL - Other Laws and Legislation

Permit number

191903V10

Nothing within this permit exempts the driver or operator of the permitted heavy vehicle from complying with legislation regulating the use of heavy vehicle. This includes but is not limited to conditions applied within the vehicles registration, compliance with sign posted restrictions, traffic law or compliance with lawful directions of authorised officer.

*continued on next page...*

Permit number

191903V10

**The driver of the heavy vehicle who is driving a vehicle that is subject to a permit issued under the HVNL must keep a copy of the permit for the exemption in the driver's possession.**

**The driver or operator of a heavy vehicle being used on a road that is subject to a permit issued under the HVNL must not contravene a condition of the permit.**

**The driver or operator must comply with the provisions of the Heavy Vehicle (Mass, Dimension and Loading) National Regulation unless anything contrary is applied within this permit.**

**It is an offence to operate a vehicle at a mass limit greater than indicated by an official traffic sign.**

## Declaration

**Signed:**

NHVR Delegate

**Dated: 29-Apr-2024**

Associated documents

N/A

**Disclaimer:**
The National Heavy Vehicle Regulator (NHVR) accepts no liability for any errors or omissions and gives no warranty or guarantee that the material, information, maps or publications made accessible are accurate, complete, current or fit for any use whatsoever. The information contained within the NHVR Route Planner online map system is subject to change without notice.

NHVR accepts no liability for the information provided within the authorised route as part of this exemption/ authorisation. The operator must ensure prior to travel that the roads/areas/networks listed in the authorised route are still current and accessible as the approved network is subject to change at any given time.

To the extent permitted by law, NHVR excludes liability for any loss (including loss from viruses, or consequential damage) caused by use of or reliance on the NHVR Route Planner.

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**END OF DOCUMENT**

# Noise Impact Assessment

# Boonenne Timbers

## 157 Boonenne Road, Goodger

Boonenne Timbers

Project No.: ATP250121

Project Name: Boonenne Timbers

Document No.: ATP250121-R-NIA-01

January 2025

# Document Control Record

| | |
|---|---|
| Prepared by: | Felix Gau Rinaldi |
| Position: | Engineer – Acoustics |
| Signed: | [redacted] |
| Date: | 16 January 2025 |

| | |
|---|---|
| Approved by: | Sasho Temelkoski<br>RPEQ 13551 |
| Position: | Managing Director |
| Signed: | [redacted] |
| Date: | 16 January 2025 |

REVISION STATUS

| Revision No. | Description of Revision | Date | Approved |
|---|---|---|---|
| 0 | Issue 1 | 16 January 2025 | S. Temelkoski |

Recipients are responsible for eliminating all superseded documents in their possession.


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# Executive Summary

ATP Consulting Engineers (ATP) was engaged to prepare a noise impact assessment (NIA) report in support of the Negotiated Decision to the existing development approval, to increase the hours of operation for the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger.

As part of the existing development, approval was given to the timber milling and woodchipping facility for the following key aspects:

- Hours of operations for the High Impact Industry are to be strictly in accordance with the following:
    - Monday to Friday – 6.00am to 5.00pm
    - Saturday (and public holidays) – 7.00am to 12.00pm (noon)
- The timber milling and woodchipping facility operates under the Environment Relevant Activity ERA 47 - *Timber milling and shredder (b) 10,000t to 20,000t per year.*

Approval is being sought to increase the hours of operation of the development to align with the approved hours of operation as per Condition G1 of the existing environmental authority (EA) permit. The proposed hours of operation for the timber milling and woodchipping facility, as per the existing EA permit, are as follows:

- Monday to Saturday – 6.00am to 6.00pm
- Chainsaw operations must not occur before 7.00am and after 6.00pm Mondays to Saturdays (and public holidays)
- Deliveries and removals by heavy vehicles between 7.00am and 6.00pm Mondays to Saturdays.
- Public Holidays – 6.00am to 3.00pm (no chainsaws before 7.00am)
- Sundays – Maintenance works only (as required)

The purpose of this report is to remove discrepancies between the hours of operations presented in the development approval and EA permit.

Noise impact assessment is required to assess the potential noise impacts from the increase of hours of operation of the development on the nearest noise sensitive places in accordance with the South Burnett Regional Council *Planning Scheme 2017* and the *Environmental Protection (Noise) Policy 2019*.

Detailed noise propagation modelling was carried out considering all potential noise emissions from the operation of the proposed timber milling and woodchipping facility at 157 Boonenne Road in Goodger to determine the potential noise impact on the nearest noise sensitive places.

The noise sources and operational scenarios included in this report have been considered based on the scale and intensity of the operations at the existing timber milling and woodchipping facility, as no changes are expected to the noise sources at 157 Boonenne Road in Goodger. The dominant noise sources are located at the covered work area, and these include noise from the circular saw and shredder. Other noise sources include delivery and dispatch of materials (truck movements), forklifts and staff and visitor parking.

The relevant noise criteria from the *Environmental Protection (Noise) Policy 2019* and the relevant general development provisions in accordance with the *South Burnett Regional Council Planning Scheme* were considered in this assessment.

The nearest noise sensitive residential receptors to the site are the low-set dwellings along Boonenne Road. However, it is to be noted that the dwellings are mostly used in association with rural activities or for commercial operations, rather than as dwellings.

The results of the conservative noise propagation modelling indicate that there will be no noise impacts on the nearest noise sensitive land uses, mainly because the most dominant noise sources are located at the covered area, which is at the back of the development, approximately 330 metres from Boonenne Road and approximately 450 metres from the nearest noise sensitive use at 156 Boonenne Road.

**Noise Mitigation Measures**

To ensure ongoing compliance with the noise criteria at the nearest noise sensitive receptors, the following mitigation measures are recommended:

- Acoustic screen in a form of industrial PVC – Strip curtains such as *Flexishield* or similar are required for the openings (end of the conveyor belt course) on the eastern façade of the shredder shed to prevent noise impact on the nearest noise sensitive places.
- The acoustic screens (curtains) should be minimum 4mm thick and with 100 to 120mm overlaps. The weighted sound reduction index should be minimum $R_w$ 18. Examples of the acoustic screens (curtains) are presented in Appendix G.
- The chainsaws should not be used during night time / early morning (6:00am to 7:00am).
- Maintenance of the blades of the circular saws should be done regularly to maintain good cutting conditions and reduce noise generated by damaged equipment.
- Mobile plant to be fitted with broadband reversing beepers. All reversing beepers should meet the relevant occupational safety requirements. This should be implemented for plant operating during night-time hours where reasonable and practicable.
- Use mufflers and engine covers/screens where appropriate for generators and mobile plant.
- Care should be taken to reduce noise when loading or unloading vehicles or moving materials. Minimise drop height of materials when transferring (e.g loading and unloading vehicles and storage areas).

Provided the recommendations of this report are fully implemented, there are no further acoustic constraints on the increase of the hours of operation of the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger.

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## Tables



## Figures



## Appendices

## Acoustics Glossary

| | |
|---|---|
| **A-weighting** | Correction to sound levels to mimic the response of the human ear at low sound frequencies. A-weighting filter covers the full audio range - 20 Hz to 20 kHz and the shape mimics the response of the human ear at the lower frequency levels. |
| **Decibel (dB)** | (1) Degree of loudness (2) A unit for expressing the relative intensity of sounds on a scale from zero for the average least perceptible sound to about 130 for the average pain level. A unit used to express relative difference in power or intensity, between two acoustic signals, equal to ten times the common logarithm of the ratio of the two levels, one of which is a standard reference value. |
| **dB(A)** | The A-weighted sound pressure level in dB. |
| **Façade adjusted** | The noise level at 1m from a building façade is calculated by adding 2.5dB to the free-field noise level to account for sound reflected from the building façade. The external noise levels at the buildings facades are "façade-adjusted". |
| **Free-field** | Noise level without any reflected sound from buildings or other hard, reflective surfaces (except for the ground plane). |
| **Hz (Hertz)** | Hertz is the standard measure of the frequency of oscillations in a wave motion. The frequency is most often measured in cycles per second (cps) or Hertz (Hz). Frequency of 1 Hz is one cycle per second. |
| **Impulsive noise and impulsiveness adjustment** | Noise having a high peak of short duration or a sequence of such peaks. Impulsive noise is present if the difference in A-weighted maximum noise levels between fast response and impulse response is greater than 2dB. Impulsiveness adjustment (penalty) of up to 5dB should be applied to the component noise level. |
| **$L_{Amax,T}$** | The maximum A-weighted sound pressure level occurring in a specified time period T in seconds. |
| **$L_{Aeq,T}$** | "Average-energy" sound level used in situations where sound varies over time. $L_{Aeq,T}$ is the A-weighted sound pressure level that has the same energy as the fluctuating sound over the time period T in seconds. |
| **$L_{A1,T}$** | Measure of the maximum sound level. $L_{A01,T}$ is a statistical parameter that is the A-weighted sound pressure level that is exceeded for 1% of the measurement time T. |
| **$L_{A10,T}$** | $L_{A10,T}$ is a statistical parameter that is the A-weighted sound pressure level that is exceeded for 10% of the measurement time T. Used as a traffic noise descriptor in Queensland. |
| **$L_{A90,T}$** | Background sound level. $L_{A90,T}$ is a statistical parameter that is the A-weighted sound pressure level that is exceeded for 90% of the measurement time T. |
| **Noise** | Unwanted sound. |
| **Octave bands and 1/3 octave bands** | A range of frequencies whose upper frequency limit is twice that of its lower frequency limit. In acoustics, the audible spectrum (20Hz to 20kHz) is divided into 10 parts |

| | |
|---|---|
| | (octaves) with centre frequencies of 31.5Hz, 63Hz, 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 4kHz, 8kHz and 16kHz.<br><br>For more detailed frequency analysis, octave bands are further divided into more discrete bands. For examples, 1/3 octaves bands are where each octave band is divided into three parts.<br><br>IEC 61260:1995, *Electroacoustics — Octave-band and fractional-octave band filters* |
| **Sound power** | The sound energy radiated per unit time by a sound source, measured in Watts (W). |
| **Sound Power Level, $L_w$ (SWL)** | Logarithmic measure of sound power on a decibel scale, referenced to the human hearing threshold of $1 \times 10^{-12}$ W. |
| **Sound pressure** | The fluctuations in air, measured in Pascals (Pa). |
| **Sound Pressure Level, $L_p$ (SPL)** | Logarithmic measure of sound pressure on a decibel scale, referenced to the human hearing threshold of $2 \times 10^{-5}$ Pa. |
| **Tonal noise, tonality, and tonality adjustment** | Tonal noise is characterised by one or more distinct frequency components (“tones”) that emerge audibly from the total sound. For example, distinct tones may be emitted by fans, saws, grinders, and other equipment. Tonal noise is generally far more annoying than non-tonal noise. Presence of tonal sound (“tonality”) can be identified by analysing the sound levels in adjacent 1/3 octave bands.<br><br>AS1055.1-1997 and the DEHP Noise Measurement Manual 2013 provides guidance on how tonality should be assessed. If tonal components are clearly audible and they can be detected by 1/3 octave analysis (1/3 octave band exceeds neighbouring bands by at least 5dB), tonality adjustment (penalty) of up to 5dB should be applied to the component noise level. |
| **Weighted Sound Reduction Index ($R_w$)** | A single-number quantity which characterises the airborne sound insulation of a material or building element over a range of frequencies. |

# 1. Introduction

## 1.1 Project Background

ATP Consulting Engineers (ATP) was engaged to prepare a noise impact assessment (NIA) report in support of the Negotiated Decision to the existing development approval, to increase the hours of operation for the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger.

As part of the existing development, approval was given to the timber milling and woodchipping facility for the following key aspects:

- Hours of operations for the High Impact Industry are to be strictly in accordance with the following:
    - Monday to Friday – 6.00am to 5.00pm
    - Saturday (and public holidays) – 7.00am to 12.00pm (noon)
- The timber milling and woodchipping facility operates under the Environment Relevant Activity ERA 47 - *Timber milling and shredder (b) 10,000t to 20,000t per year.*

Approval is being sought to increase the hours of operation of the development to align with the approved hours of operation as per Condition G1 of the existing environmental authority (EA) permit. The proposed hours of operation for the timber milling and woodchipping facility, as per the existing EA permit, are as follows:

- Monday to Saturday – 6.00am to 6.00pm
- Chainsaw operations must not occur before 7.00am and after 6.00pm Mondays to Saturdays (and public holidays)
- Deliveries and removals by heavy vehicles between 7.00am and 6.00pm Mondays to Saturdays.
- Public Holidays – 6.00am to 3.00pm (no chainsaws before 7.00am)
- Sundays – Maintenance works only (as required)

The purpose of this report is to remove discrepancies between the hours of operations presented in the development approval and EA permit.

Noise impact assessment is required to assess the potential noise impacts from the increase of hours of operation of the development on the nearest noise sensitive places in accordance with the South Burnett Regional Council *Planning Scheme 2017* and the *Environmental Protection (Noise) Policy 2019.*

## 1.2 Study Objectives

Study objectives are as follows:

- Noise measurements using an automated noise logger to obtain data on the existing background noise levels.
- Extensive noise survey of the site to determine the noise emissions from each individual noise source and the noise levels at the boundaries of the site.
- Noise propagation modelling, considering typical noise emissions associated with the use of the proposed facility to calculate the noise levels at the nearest noise sensitive places.
- Assessment of the noise levels against the relevant noise criteria from the *Environmental Protection (Noise) Policy 2019*.
- Recommendation of noise mitigation measures to prevent noise impacts on the nearest noise sensitive places (if required).

## 1.3 Subject Site

The existing timber milling and woodchipping facility is located at 157 Boonenne Road in Goodger, on the land described as Lot 4 on RP807137

The site is located within the South Burnett Regional Council (SBRC) local government area and is presented in Figure 1.1.

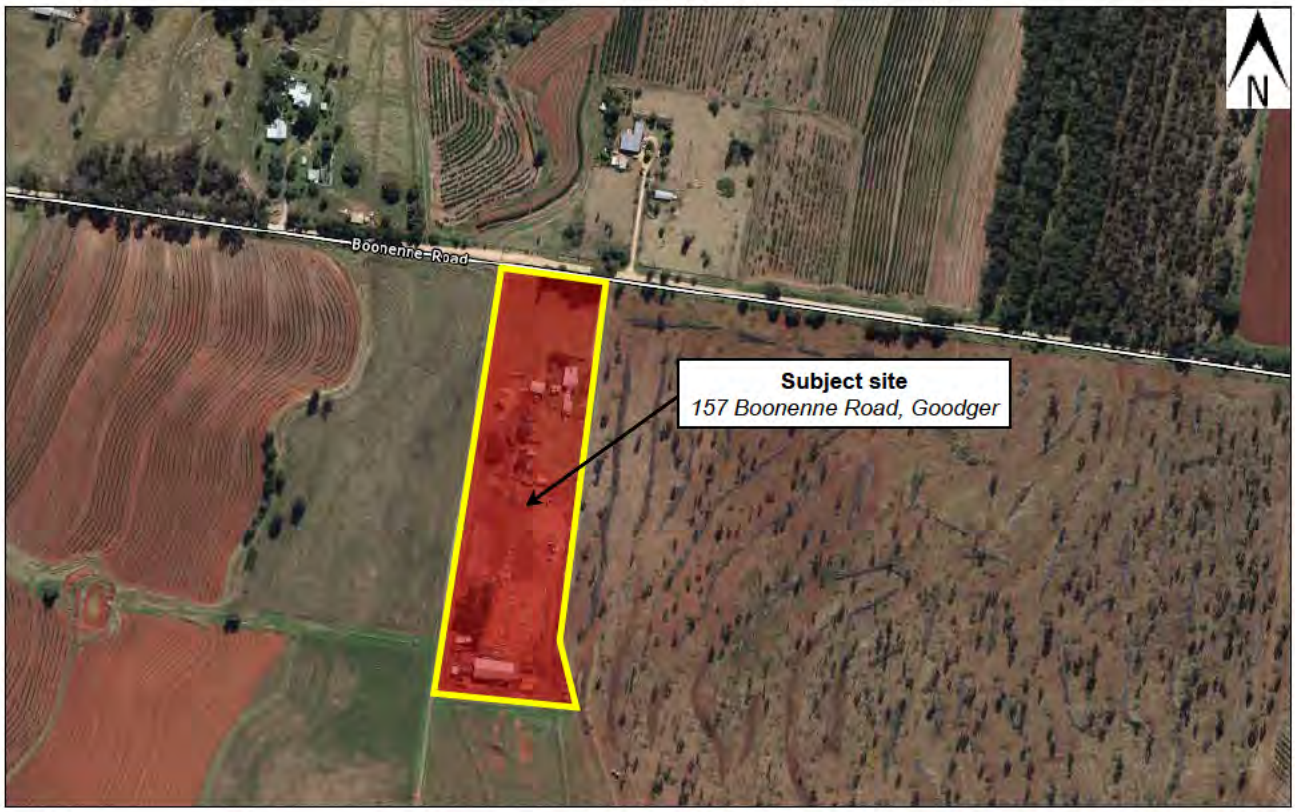



**Figure 1.1 Site location**

The proposed sawmill will include the following activities and operations:

- Delivery and storage of sawn hardwood logs;
- Timber cutting and storage; and
- Dispatch and other activities such as office space for sales and administration and workshop.

The proposed hours of operation for the timber milling and woodchipping facility are as follows:

- Monday to Saturday – 6.00am to 6.00pm
- Chainsaw operations must not occur before 7.00am and after 6.00pm Mondays to Saturdays (and public holidays)
- Deliveries and removals by heavy vehicles between 7.00am and 6.00pm Mondays to Saturdays.
- Public Holidays – 6.00m to 3.00pm (no chainsaws before 7.00am)
- Sundays – Maintenance works only (as required)

The approved development layout of the subject site is presented in Appendix A.

## 1.4 Nearest Noise Sensitive Places

The definition of "noise sensitive place" considered by DES includes a sensitive receptor for the purposes of the *EPNP 2019*. The definition of "sensitive receptor" stated in the *EPNP 2019* is: "sensitive receptor means an area or place where noise is measured". The types of sensitive receptors are listed in Schedule 1 of *EPNP 2019* and include residences, libraries and educational institutions, childcare centres, hospitals, and other medical institutions and commercial or retail activities.

The nearest noise sensitive residential receptors to the site are the low-set dwellings across Boonenne Road and to the south of the development. The nearest noise sensitive places to the development at 157 Boonenne Road are listed in Table 1.1.

**Table 1.1 Nearest noise sensitive places**

| Street address | Type | Zoning |
|---|---|---|
| No. 156 Boonenne Road | Low-set dwelling | Rural |
| No. 169 Boonenne Road | Low-set dwelling | Rural |
| No. 186 Boonenne Road | Low-set dwelling | Rural |

As per the South Burnett Regional Council Planning Scheme V2.0 (2017), the site is zoned *Rural*, with the surroundings zoned as *Rural*.

The nearest noise sensitive places are identified in Figure 1.2, overlaid over the zoning map from the *South Burnett Regional Council Planning Scheme*.

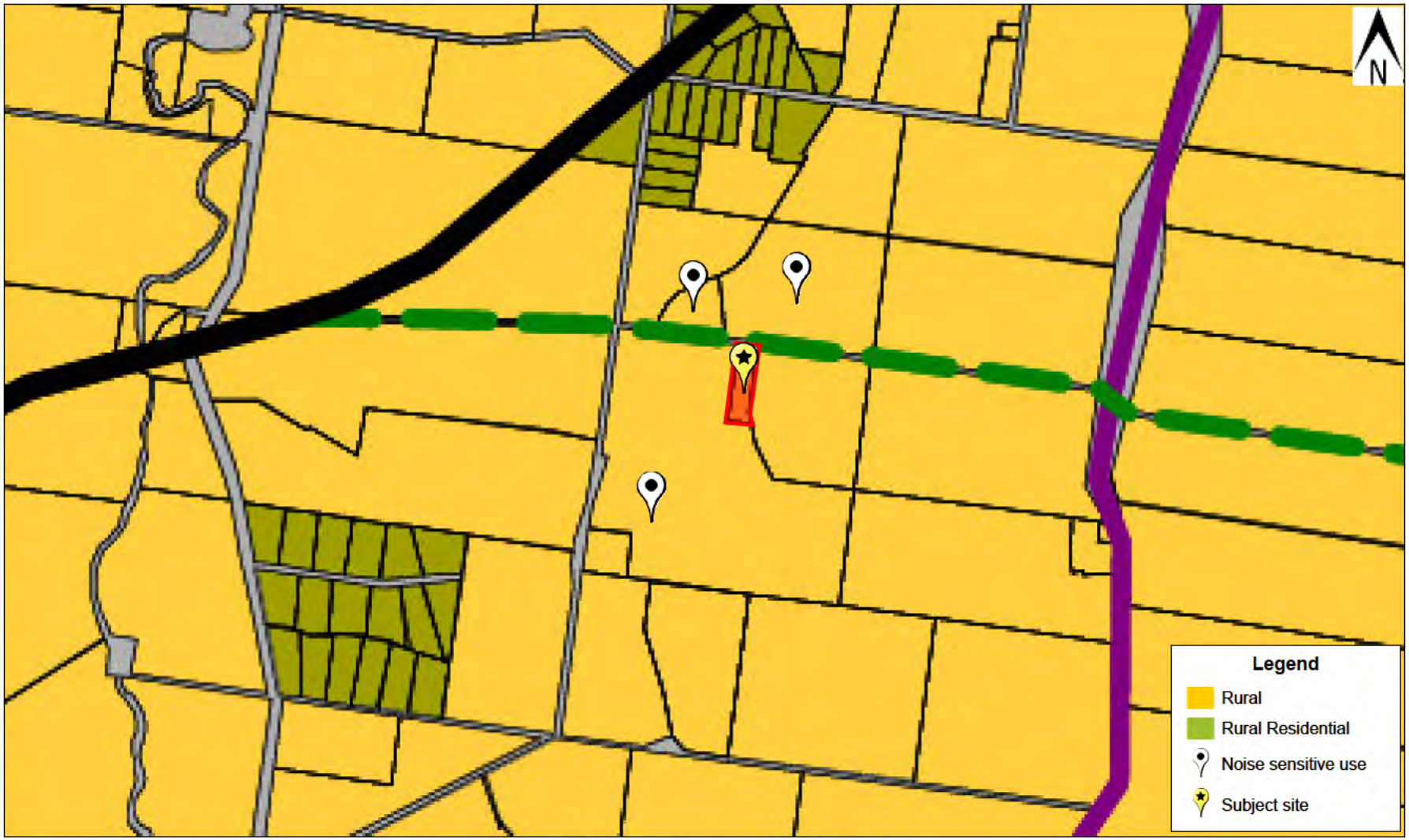



Figure 1.2 Nearest noise sensitive places

# 2. Existing Noise Amenity

## 2.1 Site-Specific Noise Measurements

Background noise monitoring was carried out in the period from 21 June to 1 July 2023 using an automated noise logger deployed along the southern boundary of Lot 3 on RP15595, No. 156 Boonenne Road, to record the background noise levels representative of the noise amenity at the nearest noise sensitive places.

In addition, a noise survey was carried out at the existing timber milling and woodchipping facility on 21 June 2023 (Wednesday).

The noise measurement methodology is summarised in Table 2.1.

**Table 2.1 Noise measurements**

| | |
|---|---|
| **Relevant legislation, standards, and guidelines** | The noise measurements were carried out in accordance with:<br>• Australian Standard AS 1055:2018 (*Acoustics – Description and measurement of environmental noise*).<br>• DES *Noise Measurement Manual v. 4.1*, 10 March 2020 |
| **Measurement location** | The background noise measurements were carried out along the southern boundary of Lot 3 on RP15595, No. 156 Boonenne Road, as presented in Figure 2.1.<br>The noise survey locations are presented in Figure 2.2<br>Photos showing the noise measurement locations are presented in Appendix B. |
| **Measurement period** | Continuous background noise monitoring was carried out along Boonenne Road in Goodger, 24 hours a day from 21 June to 1 July 2023.<br>Noise survey at the timber milling and woodchipping facility was carried out between 11:00am and 1:00pm on 21 June 2023 (Wednesday), while standard operations were taking place at the facility. |
| **Measurement equipment** | The following sound measurement equipment was used:<br>• Environmental noise logger – ARL Ngara (Serial No. 8780D2);<br>• Sound level meters – SVAN 977A (serial no. 92109 and 92176); and<br>• Calibration – RION NC-75 Sound Level Calibrator (serial no. 34413140).<br>The noise measurement instruments conform to Australian Standard AS/NZS IEC61672.1-2019. Calibration was performed during set up and download of the data from the noise logger. The calibration drift was <0.1 dB(A). |
| **Meteorological conditions** | The weather conditions during the monitoring period from 21 June to 1 July 2023 were mostly fine, no inclement weather was recorded on this period.<br>Full meteorological data for the noise monitoring period is presented in Appendix C. |

| | |
|---|---|
| **Analysis of data** | The background noise data was analysed to determine the following noise descriptor:<br>• $L_{A90,T}$: Background noise level during daytime (7am to 6pm), evening (6pm to 10pm) and night-time (10pm to 7am).<br>The noise survey data at 157 Boonenne Road was analysed to determine the following noise descriptors:<br>• $L_{Aeq,T}$, $L_{A10,T}$, $L_{A1,T}$, $L_{Amax,T}$ and $L_{A90,T}$;<br>• $L_{Aeq,T}$ in 1/3 octave bands to assess tonality; and<br>• $L_{Amax,T}$(Fast) and $L_{Amax,T}$(Impulse) to assess impulsiveness. |

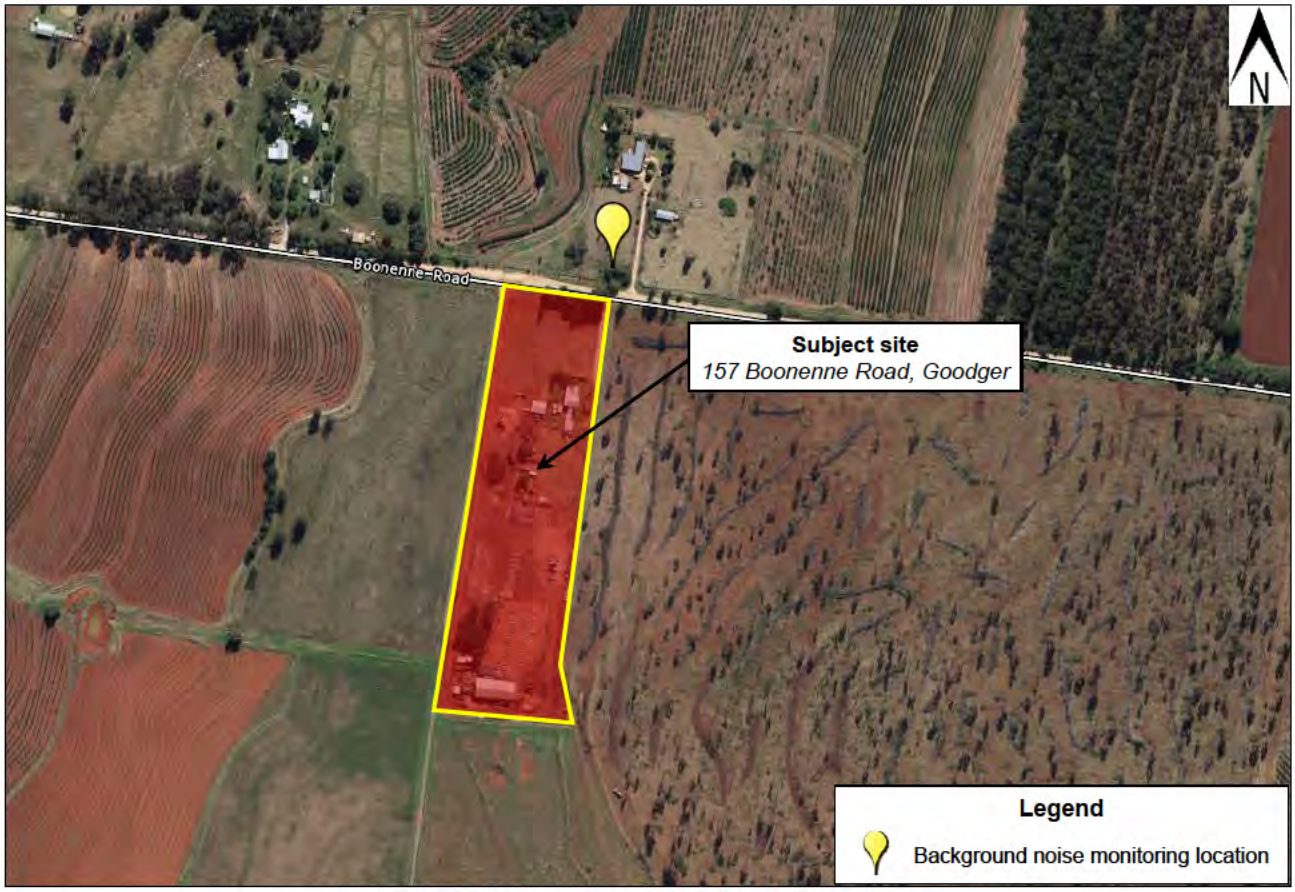



**Figure 2.1 Background noise monitoring location**

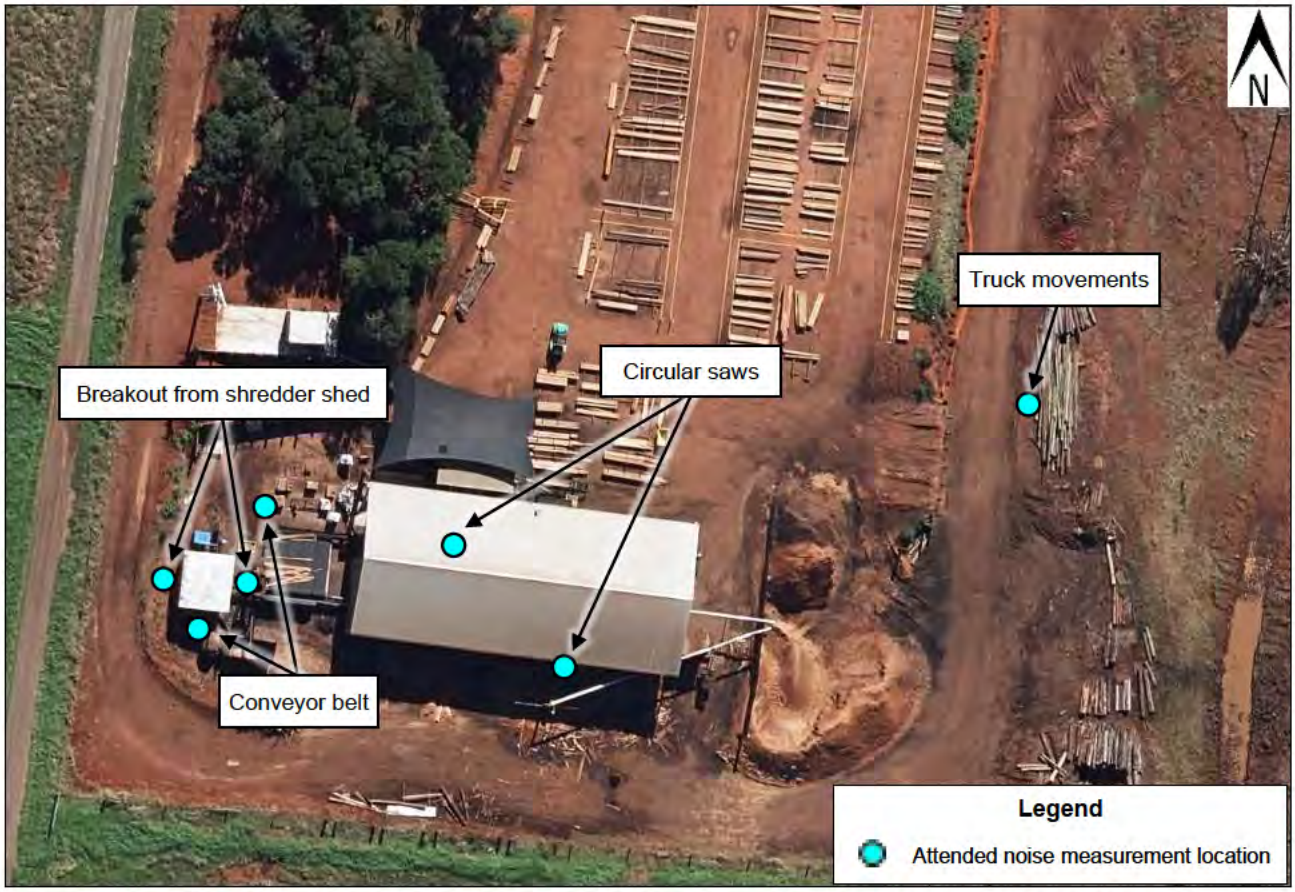



**Figure 2.2 Noise survey locations at existing timber milling and woodchipping facility**

## 2.2 Measurement Results

### 2.2.1 Background noise monitoring

The results of the background noise measurements undertaken from 21 June to 1 July 2023, expressed in terms of the relevant noise descriptors, are presented in Table 2.2 and Appendix D.

**Table 2.2 Measured background noise levels**

| Date | Background noise levels $L_{90}$ dB(A) | | |
|---|---|---|---|
| | $L_{90,11hr,Day}$ (7am–6pm) | $L_{90,4hr,Evening}$ (6pm–10pm) | $L_{90,9hr,Night}$ (10pm–7am) |
| 21 June 2023 (Wed) | — | 26 | 24 |
| 22 June 2023 (Thu) | 35 | 30 | 27 |
| 23 June 2023 (Fri) | 38 | 26 | 22 |
| 24 June 2023 (Sat) | 35 | 22 | 22 |
| 25 June 2023 (Sun) | 35 | 25 | 23 |
| 26 June 2023 (Mon) | 37 | 22 | 23 |
| 27 June 2023 (Tue) | 33 | 25 | 24 |

| Date | Background noise levels $L_{90}$ dB(A) | | |
|---|---|---|---|
| | $L_{90,11hr,Day}$ (7am–6pm) | $L_{90,4hr,Evening}$ (6pm–10pm) | $L_{90,9hr,Night}$ (10pm–7am) |
| 28 June 2023 (Wed) | 36 | 30 | 32 |
| 29 June 2023 (Thu) | 39 | 29 | 26 |
| 30 June 2023 (Fri) | 34 | 23 | 22 |
| 1 July 2023 (Sat) | 29 | 22 | 25 |
| **Arithmetic Average** | **35** | **26** | **25** |

### 2.2.2 Operational Noise Measurements Results – Near Field

Attended noise measurements were carried out at near-field locations to the equipment at the existing timber milling and woodchipping facility at 157 Boonenne Road during the current hours of operation, to determine the sound power levels of the equipment.

The results of the measurement of the operational noise levels from the mechanical equipment and plant, as carried out on 21 June 2023 (Wednesday), are presented in Table 2.4.

**Table 2.3 Attended noise measurements – 21 June 2023**

| Location | Source | Measurement location | Measured Sound Pressure Level (SPL) $L_{eq,adj,T}$ dB(A) | Measured Sound Power Level (SWL) $L_{eq,adj,T}$ dB(A) |
|---|---|---|---|---|
| Covered area | Circular saws | 1m setback | 91.6 | 99.5 |
| Shredder shed Western façade | Shredder | 1m setback | 70.9 | 78.9 |
| Shredder shed Eastern façade | Shredder | 1m setback | 93.2 | 101.1 |
| Covered area | Conveyor belt | 1m setback | 81.7 | 89.6 |
| Internal driveways | Truck movements | 1m setback | 63.3 | 71.3 |

# 3. Noise Criteria

The following documents outline the information to be provided to support a development application and environmental authority application for activities with noise impacts:

- Department of Environment and Science (DES), *Guideline: Environmental Protection Act 1994*, *Application requirements for activities with noise impacts*, 3 February 2020.
- South Burnett Regional Council *Planning Scheme V2.0 (2017).*

## 3.1 Department of Environment and Science Guideline

The DES guideline states the following:

> *When deciding an application, the department is required to assess the application against requirements stipulated in the EP Act, including considerations stated in the EP Regulation and any relevant Environmental Protection Policy, including the EPP (Noise).*
>
> *For environmental authority applications that have noise impacts the application must describe how one of the following environmental objective and performance outcomes for the ERA will be achieved. Under Schedule 8, Part 3, Division 1 of the EP Regulation the environmental objectives and performance outcomes for noise emissions in Queensland are:*
>
> ***Environmental objective***
>
> *The activity will be operated in a way that protects the environmental values of the acoustic environment.*
>
> ***Performance outcome***
>
> *(a) Sound from the activity is not audible at a sensitive receptor, or*
>
> *(b) The release of sound to the environment from the activity is managed so that adverse effects on environmental values including health and wellbeing and sensitive ecosystems are prevented or minimised.*

The DES refers to the relevant Queensland legislation for regulating noise, including the *Environmental Protection (Noise) Policy 2019*.

## 3.2 South Burnett Regional Council Planning Scheme 2017

The relevant extracts from *South Burnett Regional Council Planning Scheme V2.0 (2017) – Rural Zone, Part 6.2.13.3 Criteria for assessment* are presented in Table 3.1.

Table 3.1 Rural Zone – Accepted development subject to requirements and assessable development

| Performance outcome | Acceptable outcome |
|---|---|
| **Noise** | |
| **PO1**<br><br>Development maintains rural amenity and character. | **AO1.2**<br><br>The use does not cause odour, noise or air emissions in excess of the prescribed limits in the *Environmental Protection (Air) Policy 2019* or the *Environmental Protection (Noise) Policy 2019.* |

## 3.3 Environmental Protection (Noise) Policy 2019

### 3.3.1 Acoustic Quality Objectives

The *Environmental Protection (Noise) Policy 2019* identifies environmental values for the acoustic environment and sets acoustic quality objectives for sensitive receptors. The purpose of the acoustic quality objectives is to protect the acoustic amenity of the environment. The criteria from Schedule 1 of the policy are presented in Table 3.2.

Table 3.2 Environmental noise criteria

| Sensitive receptor | Location | Period | Acoustic quality objectives | | | Environmental value |
|---|---|---|---|---|---|---|
| | | | $L_{Aeq,adj,1\text{-}hr}$ | $L_{A10,adj,1\text{-}hr}$ | $L_{A01,adj,1\text{-}hr}$ | |
| Residence | Indoors | Day time and evening | 35 | 40 | 45 | Health and wellbeing |
| | | Night-time | 30 | 35 | 40 | Health and wellbeing, in relation to the ability to sleep |
| | Outdoors | Day time and evening | 50 | 55 | 65 | Health and wellbeing |
| | | Night-time | 37 (30 + 7) | 42 (35 + 7) | 47 (40 + 7) | Health and wellbeing, in relation to the ability to sleep |

The following is noted regarding the acoustic quality objectives:

- Under the *Noise Policy*, daytime is 7am to 6pm, evening is 6pm to 10pm and night-time is 10pm to 7am.
- The *Noise Policy* does not specify outdoor noise criteria for dwellings during night-time. However, the outdoor noise criteria have been derived from the internal criteria, assuming 7dB noise reduction by the building envelope with windows open[1].
- The assessment of compliance with the operational noise criteria is based on the results of the noise propagation modelling for a period of 1-hour with maximum noise emissions.

[1] Typical noise reduction for windows partially open, *Planning for Noise Control Guideline*, Dept. of Environment and Science (DES).

### 3.3.2 Background Creep

Controlling background creep[2] is an important consideration under the *Environmental Protection (Noise) Policy 2019* and the background creep criteria states the following:

*To the extent that it is reasonable to do so, noise from an activity must not be:*

- *For noise that is continuous noise measured by $L_{A90,T}$ – more than nil dB(A) greater than the existing acoustic environment measured by $L_{A90,T}$.*
- *For noise that varies over time measured by $L_{Aeq,adj,T}$ – more than 5dB(A) greater than the existing acoustic environment measured by $L_{A90,T}$.*

It should be noted that the 2019 version of the *Noise Policy* no longer includes the background creep criteria as written above. However, the *Policy* includes the following statement "*To the extent it is reasonable to do so, noise must be dealt with in a way that ensures– background creep in an area or place is prevented or minimised.*" Therefore, it is a requirement that background creep is assessed so ATP has continued to use the background creep criteria as written in the previous 2008 Policy.

The background creep criteria, based on the lowest measured existing background noise levels, presented in Section 2.2 of this report, are presented in Table 3.3.

**Table 3.3 Background creep noise criteria**

| Noise characteristic | Background creep criteria, $L_{Aeq,adj,T}$ | | |
|---|---|---|---|
| | **Day 7:00am to 6:00pm** | **Evening 6:00pm to 10:00pm** | **Night 10:00pm to 7:00am** |
| Continuous noise | **35** (RBL + 0) | **26** (RBL + 0) | **25** (RBL + 0) |
| Time-varying noise | **40** (RBL + 5) | **31** (RBL + 5) | **30** (RBL + 5) |

[2] Background creep is defined as an increase in the background noise levels due to constant addition of new noise sources in the environment. The purpose of the background creep noise criteria is to prevent increase in the background noise level ($L_{90,T}$), which is the main noise amenity descriptor.

# 4. Noise Propagation Modelling

## 4.1 Modelling Methodology

A 3D model of the development and surroundings was developed using SoundPLAN noise propagation software considering the location and sound power levels of the dominant noise sources at the development.

The calculations were carried out as per the procedures specified in the International Standard ISO9613 (*Acoustics – Attenuation of sound during propagation outdoors*).

The calculation method for a single frequency is as follows:

$$L_S = [\ L_W + K_0\ ] - [\ A_{dI} + A_{div} + A_{gr} + A_{bar} + A_{atm} + d_{Lrefl} + d_{Lw}\ ]$$

Where:

| | |
|---|---|
| $L_S$ | Sound pressure for a single frequency |
| $L_W$ | Sound power of source |
| $K_0$ | Correction for propagation in limited spacial angle |
| $A_{DI}$ | Mean directivity correction |
| $A_{div}$ | Mean attenuation due to geometrical spreading |
| $A_{gr}$ | Mean attenuation due to ground effect |
| $A_{bar}$ | Mean attenuation due to screening |
| $A_{atm}$ | Mean attenuation due to air absorption |
| $d_{Lrefl}$ | Level increase due to reflections |
| $d_{Lw}$ | Correction due to source operation time |

The noise propagation losses are calculated as a combination of distance attenuation (geometrical spreading), screening, ground attenuation and other factors.

The results of noise modelling as per ISO9613 are in terms of $L_{eq}$. A conversion factor was applied to $L_{eq}$ to obtain results in terms of the other assessment criteria $L_{10}$ and $L_{01}$. The conversion factors are presented in Table 4.1.

**Table 4.1 Noise descriptor conversion factors**

| Type of noise | Conversion factors | |
|---|---|---|
| | $L_{eq}$ to $L_{10}$ | $L_{eq}$ to $L_{01}$ |
| Non-continuous noise | $L_{10} = L_{eq} + 3$ dB | $L_{01} = L_{eq} + 8$ dB |
| Continuous noise | $L_{10} = L_{eq}$ | $L_{01} = L_{eq}$ |

The assumptions and data used in development of the operational noise propagation model are presented in Table 4.2.

Table 4.2 Data and assumptions – Operational noise model

| | |
|---|---|
| **Terrain** | • Department of Natural Resources and Mines Airborne Laser Scanning (LiDAR) 1 metre data was used to determine the elevation of the development relative to the surrounds.<br>• The finished surface levels of the development were provided by Boonenne Timbers.<br>• Ground surface absorption factor of 0 was applied to all paved surfaces and 1 for all grassed areas. |
| **Buildings** | • The existing buildings at the subject site were included in the model along with neighbouring buildings. The development layout is presented in Appendix A. |
| **Noise sources and operating times** | • Refer to Section 4.2. |
| **Receptors** | • Receptors were attached to the façades of the noise sensitive buildings at a height of 1.5m above finished floor level.<br>• SoundPLAN adds +2.5dB(A) to the calculated noise levels when the receptors are attached to the buildings, thus the noise levels are façade adjusted. |
| **Noise control measures** | • Refer to Section 5 of this report for recommended noise control measures. |
| **Distance attenuation** | • 3D model of the subject site and surroundings was developed using cadastral and survey data using SoundPLAN software. The source-receiver distances and geometrical spreading are automatically calculated in SoundPLAN to a high level of accuracy in accordance with the ISO9613 procedure.<br>• Separation distances and distance attenuation values are presented in Appendix E. |
| **Barrier attenuation / screening** | • Screening by walls and roofs was considered in the model. The screening was calculated in SoundPLAN in accordance with the ISO9613 procedure.<br>• Barrier attenuation / screening values are presented in Appendix E. |
| **Ground attenuation** | • Sound reflecting surfaces such as pavement are modelled with ground absorption coefficient of 0 (no absorption). Grassed and vegetated areas were modelled with ground absorption coefficient of 1 (100% absorption) in accordance with ISO9613.<br>• Ground attenuation values are presented in Appendix E. |

## 4.2 Noise Sources

Details of the major noise sources at the development with a potential to impact on the nearest noise sensitive places are presented in Table 4.3.

The noise sources used in Table 4.3 have been sourced from SoundPLAN emission library and noise measurements carried out at similar type of developments.

**Table 4.3 Noise sources**

| Operational Noise Source | Location (refer Figures 4.1 and 4.2) | Sound Power Level dB(A) (re $10^{-12}$W) | Operational Scenario | Tonality/ Impulsiveness |
|---|---|---|---|---|
| Chainsaw | Log yard | 114 dB(A) – Point Source<br><br>Derived from chainsaw manufacturer specifications – Stihl MS660 | 60min per day from 7:00am to 3:00pm | +5 dB for tonality |
| Combined noise from conveyor belts and timber processing tools | Covered area | 88 dB(A) – Area source<br><br>Derived from noise measurements at the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger. | Continuous operation 6:00am to 3:00pm | +5 dB for tonality |
| Circular saws | Covered area | 99 dB(A) – Point source<br><br>Derived from noise measurements at the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger. | 6min per hour from 6:00am to 3:00pm | +5 dB for tonality |
| Shredder | Eastern façade of the shredder shed | 100 dB(A) – Point source<br><br>Derived from noise measurements at the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger. | Continuous operation 6:00am to 3:00pm | +5 dB for tonality |
| Breakout noise – shredder shed | Shredder shed | 79 dB(A) sound power level per unit, radiated from the external walls and roof of the shredder shed.<br><br>Derived from noise measurements at the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger. | Continuous operation 6:00am to 3:00pm | +5 dB for tonality |
| Breakout noise – Flexishield | Eastern façade of the shredder shed | 83 dB(A) sound power level per unit, radiated from the northern and southern external Flexishield walls on the Eastern façade of the shredder shed.<br><br>Derived from noise measurements at the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger. | Continuous operation 6:00am to 3:00pm | +5 dB for tonality |

| Operational Noise Source | Location (refer Figures 4.1 and 4.2) | Sound Power Level dB(A) (re $10^{-12}$W) | Operational Scenario | Tonality/ Impulsiveness |
|---|---|---|---|---|
| Delivery truck movements | Internal driveways | 101 dB(A) point source, moving at 20 km/h, equating to a line source with 58 dB(A) per metre[3].<br><br>ATP Library: Truck Slowly Accelerating 10-20km/h | • 6 movements per hour between 6:00am to 3:00pm<br><br>• 1 movement per hour between 3:00pm to 6:00pm | +5 dB for tonality |
| Forklift and trucks loading | Sawn timber storage and dispatch | 92 dB(A) – Area source<br><br>SoundPLAN Library: Truck loading low lift | Continuous operation 6:00am to 3:00pm | +5 dB for tonality |
| Staff and visitor carpark | Office area | SoundPLAN calculates[4] noise emissions from parking areas based on the number of parking bays, surface type, and the type of parking lot, and considers the impact noise of a car door closing – 'slam'.<br><br>The data input for the car parks is as follows:<br>• No. Parking Bays: 15<br>• Surface Type: Gravel<br>• Parking Lot Type: Staff and visitors | • 15 movements per hour between 6:00am to 3:00pm<br><br>• 8 movements per hour between 3:00pm to 6:00pm | +5 dB for impulsiveness |

Excerpt from the SoundPLAN 3D noise propagation model is presented in Figures 4.1 and 4.2.

[3] Modelled as a line source, with the sound power per metre calculated using the "moving point source definition" in SoundPLAN (point source with sound power of 100.7 dB(A) moving at 20 km/h).
[4] SoundPLAN uses the methodology of the Bavarian parking lot study (2007) to calculate car park noise emissions. (Bavarian State Agency for the Environment 2007, *Parking Area Noise*, 6th Edition, Bavarian State Ministry for the Environment, Germany).

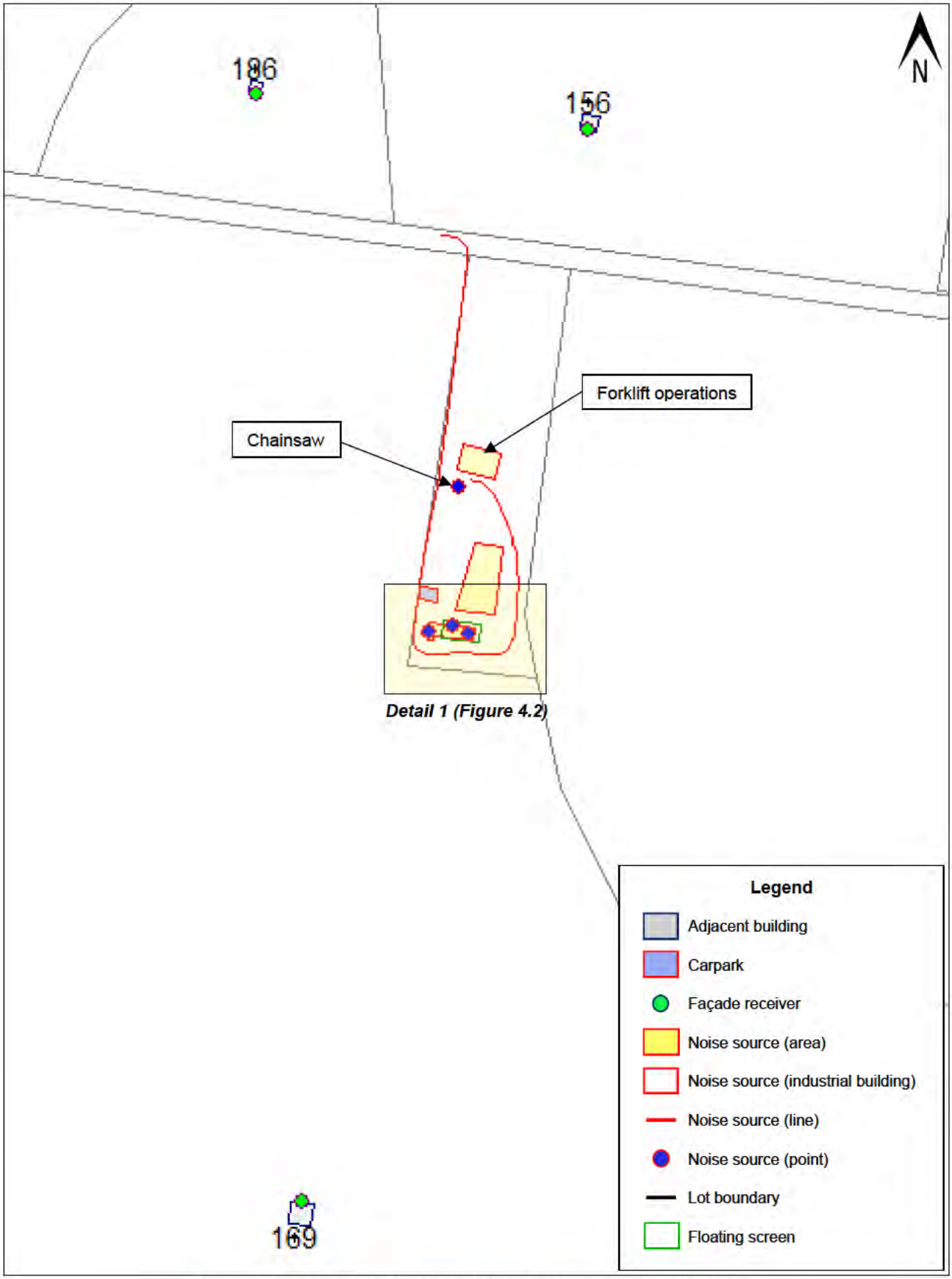



**Figure 4.1 SoundPLAN operational noise model – Overview**

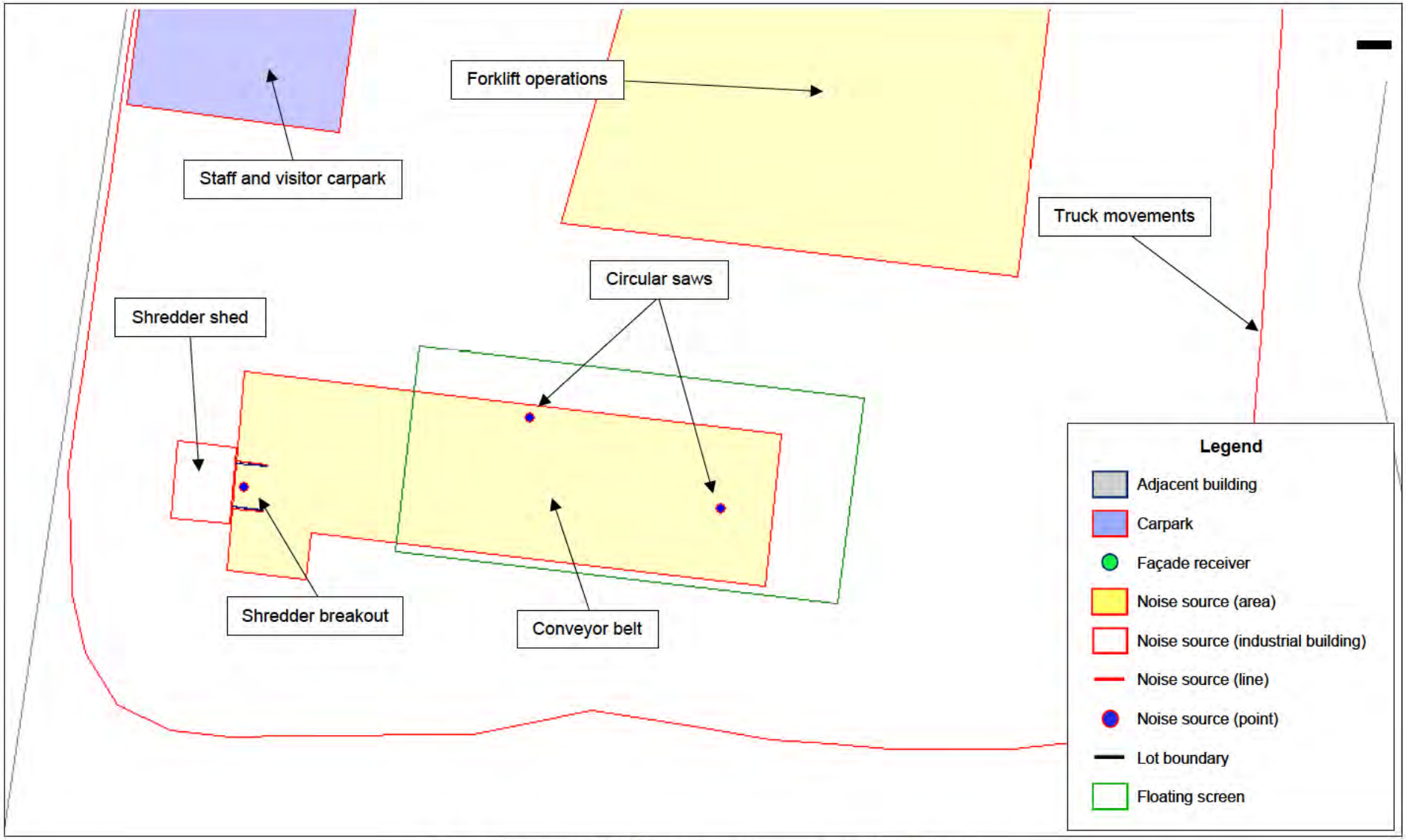



**Figure 4.2 SoundPLAN operational noise model – Detail 1**

## 4.3 Operational Noise Calculation Results

### 4.3.1 Acoustic Quality Objectives

Summary of the highest calculated noise levels for time interval T = 1hr at the nearest noise sensitive places, relative to the acoustic quality objectives, are presented in Table 4.4.

Table 4.4 Operational noise levels – Acoustic quality objectives

| Location | Calculated noise levels | | | | | | | | | Complies with noise criteria? |
|---|---|---|---|---|---|---|---|---|---|---|
| | $L_{eq,adj,1hr}$ day dB(A) | $L_{eq,adj,1hr}$ evening dB(A) | $L_{eq,adj,1hr}$ night dB(A) | $L_{10,adj,1hr}$ day dB(A) | $L_{10,adj,1hr}$ evening dB(A) | $L_{10,adj,1hr}$ night dB(A) | $L_{01,adj,1hr}$ day dB(A) | $L_{01,adj,1hr}$ evening dB(A) | $L_{01,adj,1hr}$ night dB(A) | |
| *EP Noise 2019 acoustic quality objectives (external criteria) for residences:* | 50 | 50 | 37 | 55 | 55 | 42 | 65 | 65 | 47 | |
| No. 156 Boonenne Road | 44 | — | 38 | 47 | — | 41 | 52 | — | 46 | Yes |
| No. 169 Boonenne Road | 39 | — | 36 | 42 | — | 39 | 47 | — | 44 | Yes |
| No. 186 Boonenne Road | 42 | — | 35 | 45 | — | 38 | 50 | — | 43 | Yes |

### 4.3.2 Background Creep

Summary of the highest calculated noise levels for the time interval T = 11hr, 4hr and 9hr at the nearest noise sensitive places, relative to the background creep criteria, are presented in Table 4.5.

**Table 4.5 Operational noise levels – Background creep**

| Location | Calculated noise levels | | | Complies with noise criteria? |
|---|---|---|---|---|
| | $L_{eq,adj,11hr}$ Day dB(A) | $L_{eq,adj,4hr}$ Evening dB(A) | $L_{eq,adj,9hr}$ Night dB(A) | |
| *EP Noise Policy 2008* background creep (external criteria): | | | | |
| Continuous noise | 35 | 26 | 25 | |
| Variable noise | 40 | 31 | 30 | |
| No. 156 Boonenne Road | 40 | — | 28 | Yes |
| No. 169 Boonenne Road | 36 | — | 27 | Yes |
| No. 186 Boonenne Road | 38 | — | 26 | Yes |

SoundPLAN tabulated noise levels (cumulative noise impacts) are presented in Appendix E.

Separate acoustic impacts of the individual noise sources considered in the SoundPLAN model, and the noise propagation modelling factors as per International Standard ISO9613 (*Acoustics – Attenuation of sound during propagation outdoors*) calculation method are also presented in Appendix E.

Noise propagation modelling contour maps are presented in Appendix F.

# 5. Discussion and Recommendations

Detailed noise propagation modelling was carried out considering all potential noise emissions from the operation of the proposed timber milling and woodchipping facility at 157 Boonenne Road in Goodger to determine the potential noise impact on the nearest noise sensitive places.

The noise sources and operational scenarios included in this report have been considered based on the scale and intensity of the operations at the existing timber milling and woodchipping facility, as no changes are expected to the noise sources at 157 Boonenne Road in Goodger. The dominant noise sources are located at the covered work area, and these include noise from the circular saw and shredder. Other noise sources include delivery and dispatch of materials (truck movements), forklifts and staff and visitor parking.

The relevant noise criteria from the *Environmental Protection (Noise) Policy 2019* and the relevant general development provisions in accordance with the *South Burnett Regional Council Planning Scheme* were considered in this assessment.

The nearest noise sensitive residential receptors to the site are the low-set dwellings along Boonenne Road. However, it is to be noted that the dwellings are mostly used in association with rural activities or for commercial operations, rather than as dwellings.

The results of the conservative noise propagation modelling indicate that there will be no noise impacts on the nearest noise sensitive land uses, mainly because the most dominant noise sources are located at the covered area, which is at the back of the development, approximately 330 metres from Boonenne Road and approximately 450 metres from the nearest noise sensitive use at 156 Boonenne Road.

## 5.1 Noise Mitigation Measures

To ensure ongoing compliance with the noise criteria at the nearest noise sensitive receptors, the following mitigation measures are recommended:

- Acoustic screen in a form of industrial PVC – Strip curtains such as *Flexishield* or similar are required for the openings (end of the conveyor belt course) on the eastern façade of the shredder shed to prevent noise impact on the nearest noise sensitive places. The alignment of the acoustic screen is presented in Figure 5.1.


Figure 5.1 Alignment of acoustic screen (shredder shed)

- The acoustic screens (curtains) should be minimum 4mm thick and with 100 to 120mm overlaps. The weighted sound reduction index should be minimum $R_w$ 18. Examples of the acoustic screens (curtains) are presented in Appendix G.
- The chainsaws should not be used during night time (6:00am to 7:00am).
- Maintenance of the blades of the circular saws should be done regularly to maintain good cutting conditions and reduce noise generated by damaged equipment.
- Mobile plant to be fitted with broadband reversing beepers. All reversing beepers should meet the relevant occupational safety requirements. This should be implemented for plant operating during night-time hours where reasonable and practicable.
- Use mufflers and engine covers/screens where appropriate for generators and mobile plant.
- Care should be taken to reduce noise when loading or unloading vehicles or moving materials. Minimise drop height of materials when transferring (e.g loading and unloading vehicles and storage areas).

Provided the recommendations of this report are fully implemented, there are no further acoustic constraints on the increase of the hours of operation of the existing timber milling and woodchipping facility at 157 Boonenne Road in Goodger.

# 6. References


- Australian Standard *AS 1055:2018 (Acoustics – Description and Measurement of Environmental Noise)*
- Australian Standard *AS/NZS IEC 61672.1-2019* (*Electroacoustics – Sound level meters – Specifications*)
- South Burnett Regional Council, *Planning Scheme Version 2.0*, 2017
- Department of Environment and Science (DES), *Guideline: Environmental Protection Act 1994, Application requirements for activities with noise impacts*, 3 February 2020.
- Department of Environment and Science (DES), *Noise Measurement Manual v. 4.1*, 10 March 2020
- International Standard ISO 9613 (*Acoustics – Attenuation of sound during propagation outdoors*)
- Queensland Government, *Environmental Protection Act 1994*
- Queensland Government, *Environmental Protection (Noise) Policy 2019*
- Queensland Government, *Environmental Protection Regulation 2019*

# 7. Appendices

Appendix A – Site Layout

Appendix B – Site Photos

Appendix C – Meteorological Data

Appendix D – Background Noise Measurement Results

Appendix E – Operational Noise Level

Appendix F – Noise Contour Maps

Appendix G – Acoustic Screening (Curtains)

# Appendix A – Site Layout


Diagram 4: Site infrastructure identified (base figure Qld Globe, November 2022).

A Residence

B Shed (not associated with Residence)

C Sawdust stockpile

D Shredded log yard waste

E Firewood stockpile

F Equipment laydown areas

G Sawn timber load-out area

H Log yard

I Mobile machinery parking area

J Water tank, toilet and bunded diesel AST

K Sawdust from Sawmill

L Sawmill (includes workshop, sawroom & chainsaw shed

M Chipper

N Office

O Transformer

P Sawn timber storage

Q Entry/exit to sawmill

R Entry/exit to residence

S Sediment basin

# Appendix B – Site Photos

**Photo 1: Background noise monitoring location – view due north**

**Photo 2: Noise measurement (Front-end loader) – view due west**

# Appendix C – Meteorological Data

# Kingaroy, Queensland
# June 2023 Daily Weather Observations

Australian Government
Bureau of Meteorology

| Date | Day | Temps | | Rain | Evap | Sun | Max wind gust | | | 9am | | | | | | 3pm | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Min | Max | | | | Dirn | Spd | Time | Temp | RH | Cld | Dirn | Spd | MSLP | Temp | RH | Cld | Dirn | Spd | MSLP |
| | | °C | °C | mm | mm | hours | | km/h | local | °C | % | eighths | | km/h | hPa | °C | % | eighths | | km/h | hPa |
| 1 | Th | 1.9 | 23.7 | 0 | | | NW | 24 | 10:25 | 14.1 | 67 | | | Calm | 1023.0 | 23.1 | 30 | | SW | 9 | 1019.3 |
| 2 | Fr | 3.2 | 24.2 | 0 | | | E | 20 | 10:15 | 14.5 | 65 | | | Calm | 1024.4 | 23.6 | 37 | | E | 11 | 1021.7 |
| 3 | Sa | 10.4 | 22.2 | 0 | | | ESE | 24 | 10:53 | 15.8 | 96 | | SSE | 13 | 1026.9 | 21.4 | 51 | | ENE | 9 | 1023.8 |
| 4 | Su | 12.4 | 19.1 | 0.8 | | | ESE | 33 | 18:35 | 16.3 | 100 | | ESE | 9 | 1027.4 | 18.7 | 90 | | ESE | 15 | 1024.5 |
| 5 | Mo | 13.5 | 17.9 | 1.8 | | | SE | 39 | 14:47 | 15.5 | 99 | | ESE | 17 | 1027.4 | 14.8 | 99 | | ESE | 19 | 1024.6 |
| 6 | Tu | 12.0 | 20.8 | 0.2 | | | ESE | 39 | 09:06 | 15.1 | 85 | | ESE | 17 | 1027.9 | 19.3 | 56 | | ESE | 15 | 1024.4 |
| 7 | We | 7.2 | 21.2 | 0 | | | E | 39 | 11:03 | 14.4 | 94 | | ESE | 11 | 1027.1 | 19.3 | 51 | | E | 13 | 1023.0 |
| 8 | Th | 6.0 | 22.4 | 0.4 | | | | | | 14.5 | 100 | | SSE | 4 | 1023.2 | 20.8 | 54 | | NNW | 11 | 1017.9 |
| 9 | Fr | 8.9 | | | | | | | | 12.3 | 100 | | | Calm | 1019.6 | 20.3 | 38 | | WSW | 13 | 1018.0 |
| 10 | Sa | -1.0 | 21.2 | | | | E | 22 | 11:03 | 13.0 | 61 | | S | 13 | 1023.5 | 20.7 | 31 | | ENE | 7 | 1020.2 |
| 11 | Su | 3.2 | 21.5 | 0 | | | E | 30 | 10:28 | 15.0 | 85 | | ESE | 13 | 1025.0 | 20.3 | 49 | | SE | 15 | 1021.1 |
| 12 | Mo | 5.4 | 21.5 | 0 | | | SSE | 30 | 14:16 | 13.2 | 100 | | S | 11 | 1023.7 | 19.0 | 60 | | ESE | 15 | 1019.4 |
| 13 | Tu | 11.1 | 24.3 | 0 | | | WNW | 41 | 11:46 | 12.6 | 100 | | S | 6 | 1020.2 | 22.9 | 38 | | SW | 19 | 1015.3 |
| 14 | We | 2.6 | 22.7 | 0 | | | W | 46 | 11:34 | 13.4 | 70 | | | Calm | 1018.6 | 21.5 | 25 | | WSW | 19 | 1016.0 |
| 15 | Th | -2.3 | 20.7 | 0 | | | SSE | 35 | 08:40 | 12.1 | 52 | | SSE | 20 | 1019.6 | 19.9 | 25 | | WSW | 15 | 1015.6 |
| 16 | Fr | -2.4 | 19.6 | 0 | | | S | 30 | 09:37 | 10.3 | 68 | | WNW | 7 | 1021.9 | 19.5 | 21 | | SSW | 15 | 1018.5 |
| 17 | Sa | -1.5 | 21.0 | 0 | | | ESE | 20 | 10:14 | 12.0 | 73 | | | Calm | 1023.2 | 20.1 | 31 | | NNW | 13 | 1018.9 |
| 18 | Su | 1.9 | 23.1 | 0 | | | SW | 31 | 22:17 | 10.5 | 94 | | | Calm | 1020.9 | 22.4 | 31 | | W | 13 | 1015.9 |
| 19 | Mo | 0.5 | 22.0 | 0 | | | WSW | 35 | 13:44 | 12.6 | 57 | | SSW | 7 | 1020.0 | 20.8 | 26 | | WSW | 19 | 1016.3 |
| 20 | Tu | -2.3 | 19.2 | 0 | | | SSW | 41 | 08:29 | 12.2 | 43 | | S | 24 | 1021.1 | 18.5 | 26 | | SSW | 17 | 1018.3 |
| 21 | We | -0.7 | 20.6 | 0 | | | E | 26 | 09:52 | 13.4 | 54 | | | Calm | 1023.3 | 20.2 | 30 | | N | 7 | 1019.6 |
| 22 | Th | 4.6 | 21.9 | 0 | | | NNW | 31 | 11:29 | 14.3 | 68 | | E | 7 | 1021.5 | 20.7 | 40 | | N | 13 | 1016.6 |
| 23 | Fr | 9.2 | 23.8 | 0 | | | WNW | 43 | 11:43 | 16.6 | 83 | | NNW | 20 | 1017.1 | 23.0 | 45 | | W | 22 | 1014.4 |
| 24 | Sa | 0.9 | 24.7 | 0 | | | W | 37 | 13:34 | 10.8 | 75 | | | Calm | 1019.3 | 24.0 | 23 | | W | 15 | 1015.7 |
| 25 | Su | 1.9 | 27.7 | 0 | | | WSW | 46 | 13:48 | 13.6 | 53 | | | Calm | 1020.1 | 26.4 | 24 | | WSW | 28 | 1016.3 |
| 26 | Mo | 6.6 | 24.4 | 0 | | | WSW | 35 | 13:26 | 17.3 | 44 | | | Calm | 1020.6 | 22.7 | 23 | | SW | 19 | 1018.0 |
| 27 | Tu | 2.8 | 24.0 | 0 | | | S | 35 | 09:42 | 15.6 | 27 | | S | 20 | 1022.1 | 23.7 | 11 | | SSE | 7 | 1019.0 |
| 28 | We | 6.4 | 26.9 | 0 | | | SW | 39 | 22:12 | 15.3 | 54 | | NW | 9 | 1020.9 | 25.5 | 31 | | NW | 20 | 1014.8 |
| 29 | Th | 12.8 | 17.3 | 0 | | | SW | 46 | 05:13 | 13.7 | 76 | | SW | 17 | 1017.4 | 15.1 | 56 | | WSW | 20 | 1017.0 |
| 30 | Fr | -0.1 | 18.1 | 0 | | | SSW | 31 | 00:01 | 8.4 | 60 | | WNW | 6 | 1022.4 | 16.8 | 25 | | SSW | 19 | 1018.9 |
| **Statistics for June 2023** | | | | | | | | | | | | | | | | | | | | | |
| | Mean | 4.5 | 22.0 | | | | | | | 13.6 | 73 | | | 8 | 1022.3 | 20.8 | 39 | | | 15 | 1018.8 |
| | Lowest | -2.4 | 17.3 | | | | | | | 8.4 | 27 | | | Calm | 1017.1 | 14.8 | 11 | | # | 7 | 1014.4 |
| | Highest | 13.5 | 27.7 | 1.8 | | | # | 46 | | 17.3 | 100 | | S | 24 | 1027.9 | 26.4 | 99 | | WSW | 28 | 1024.6 |
| | Total | | | 3.2 | | | | | | | | | | | | | | | | | |

Observations were drawn from Kingaroy Airport {station 040922}

IDCJDW4069.202306 Prepared at 13:01 UTC on 2 Jul 2023

# Appendix D – Background Noise Measurement Results

## Unattended Noise Measurements
## Boonenne Timbers

Environmental Noise Levels Day, Evening and Night

**Logger Location - Southern boundary of Lot 3 on RP15595**

| | |
|---|---|
| ARL Environmental Noise Logger | |
| Logger Serial Number | 8780D2 |
| Measurement Title | 20230621_130816 |
| Measurement started at | 21/06 13:15 |
| Measurement stopped at | 02/07 12:45 |
| Frequency Weighting | A |
| Time Averaging | Fast |
| Statistical Interval | 15 min |
| Pre-measurement Ref. | 94.0 |
| Post-measurement Ref. | 93.9 |
| Engineering Units | dB SPL |

| | | $L_{Aeq,T}$ dB(A) | | | $L_{A01,T}$ dB(A) | | | $L_{A10,T}$ dB(A) | | | $L_{A90,T}$ dB(A) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Date** | **Day** | **D** | **E** | **N** | **D** | **E** | **N** | **D** | **E** | **N** | **D** | **E** | **N** |
| 21/06/2023 | Wednesday | — | 32 | 30 | — | 41 | 38 | — | 35 | 32 | — | 26 | 24 |
| 22/06/2023 | Thursday | 48 | 35 | 33 | 60 | 43 | 42 | 48 | 38 | 35 | 35 | 30 | 27 |
| 23/06/2023 | Friday | 47 | 33 | 27 | 57 | 40 | 36 | 48 | 35 | 29 | 38 | 26 | 22 |
| 24/06/2023 | Saturday | 45 | 28 | 29 | 56 | 36 | 38 | 46 | 30 | 30 | 35 | 22 | 22 |
| 25/06/2023 | Sunday | 45 | 30 | 28 | 55 | 37 | 36 | 47 | 32 | 29 | 35 | 25 | 23 |
| 26/06/2023 | Monday | 46 | 28 | 28 | 58 | 36 | 35 | 47 | 31 | 28 | 37 | 22 | 23 |
| 27/06/2023 | Tuesday | 43 | 36 | 31 | 55 | 46 | 40 | 42 | 35 | 33 | 33 | 25 | 24 |
| 28/06/2023 | Wednesday | 44 | 36 | 38 | 55 | 43 | 45 | 45 | 38 | 40 | 36 | 30 | 32 |
| 29/06/2023 | Thursday | 47 | 35 | 32 | 57 | 43 | 38 | 47 | 37 | 33 | 39 | 29 | 26 |
| 30/06/2023 | Friday | 45 | 30 | 27 | 57 | 38 | 35 | 45 | 31 | 29 | 34 | 23 | 22 |
| 1/07/2023 | Saturday | 44 | 28 | 31 | 57 | 35 | 38 | 43 | 30 | 33 | 29 | 22 | 25 |
| **Average** | | **45** | **32** | **30** | **57** | **40** | **38** | **46** | **34** | **32** | **35** | **26** | **25** |

***Note***

— No noise data available

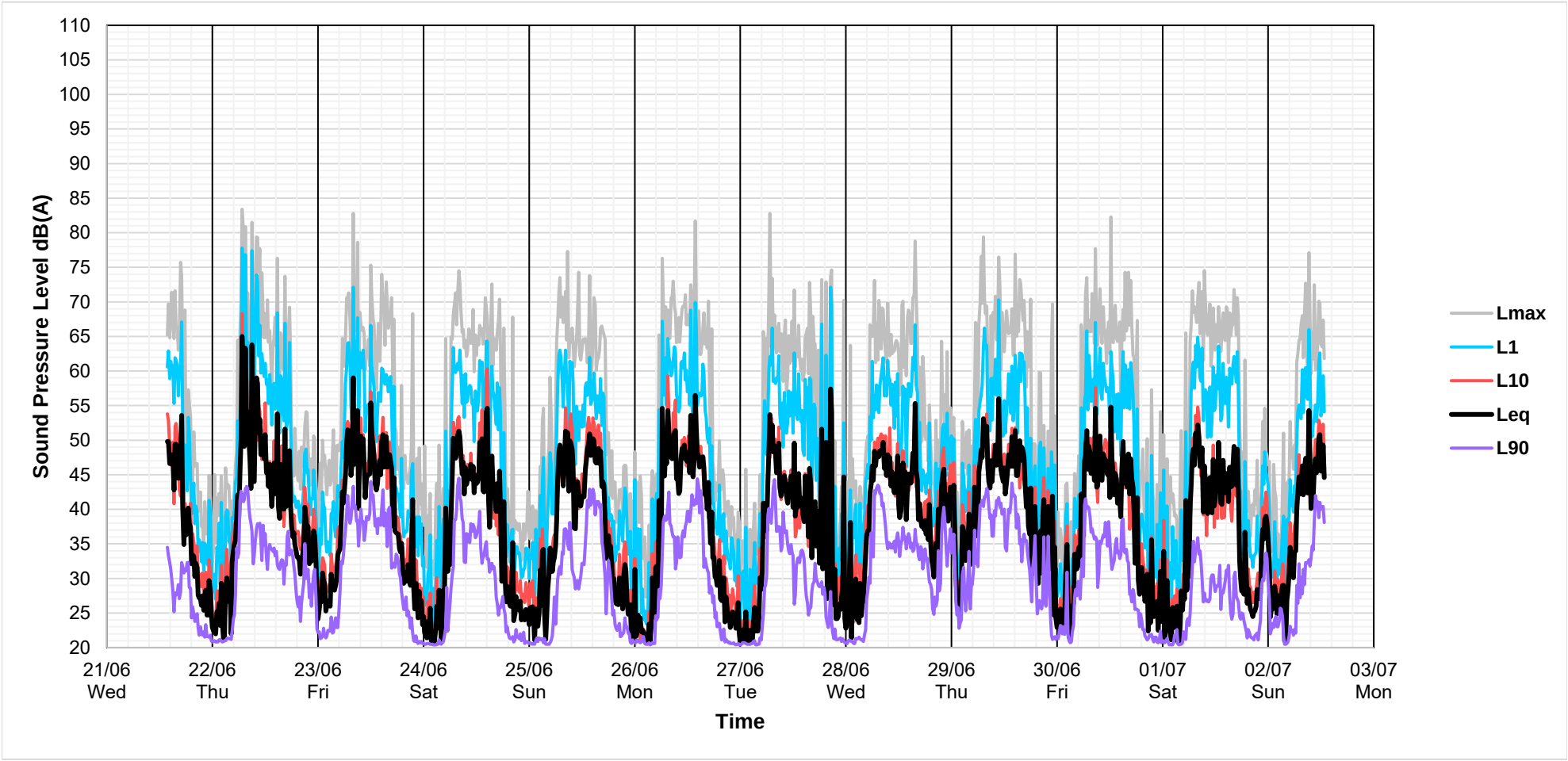
Day (D): 7:00am to 6:00pm

Evening (E): 6:00pm to 10:00pm

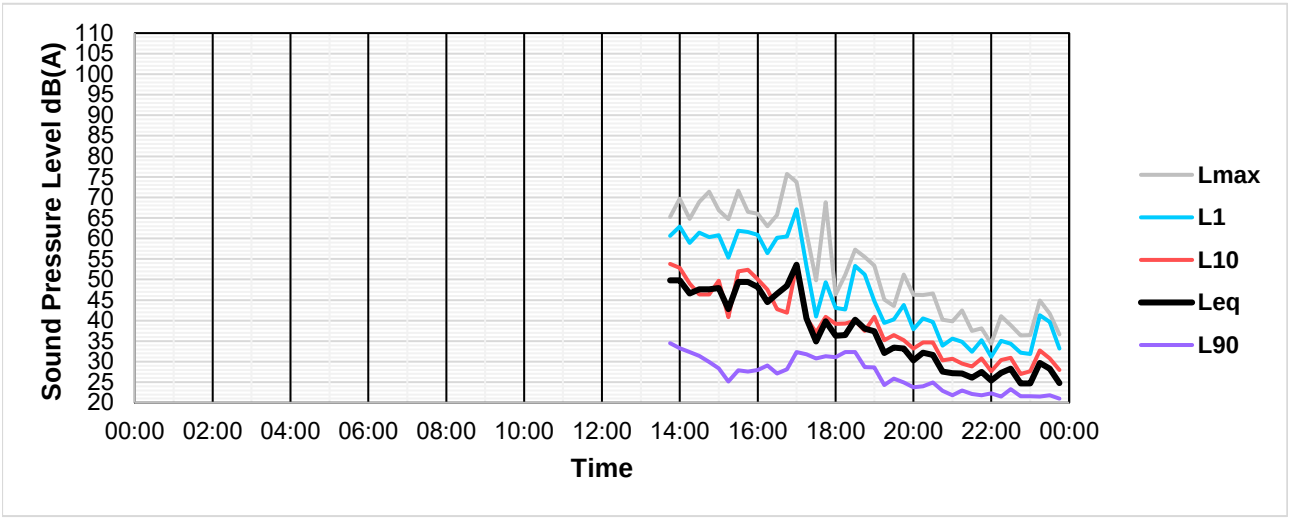
Night (N): 10:00pm to 7:00am

Rainfall recorded on this day

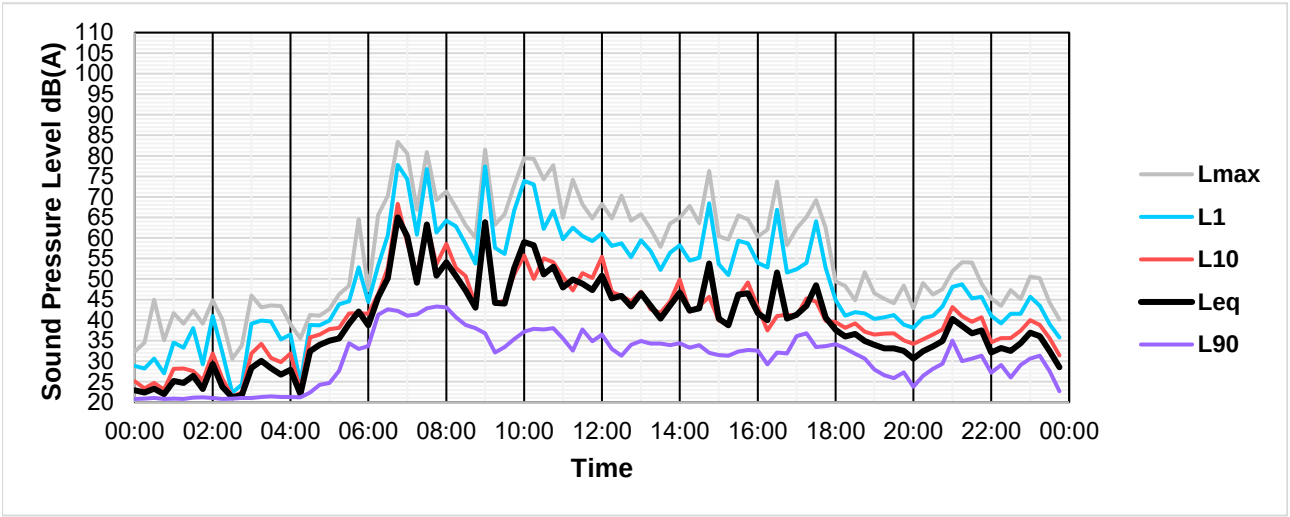
## Unattended Noise Measurements
## 21 June to 2 July 2023



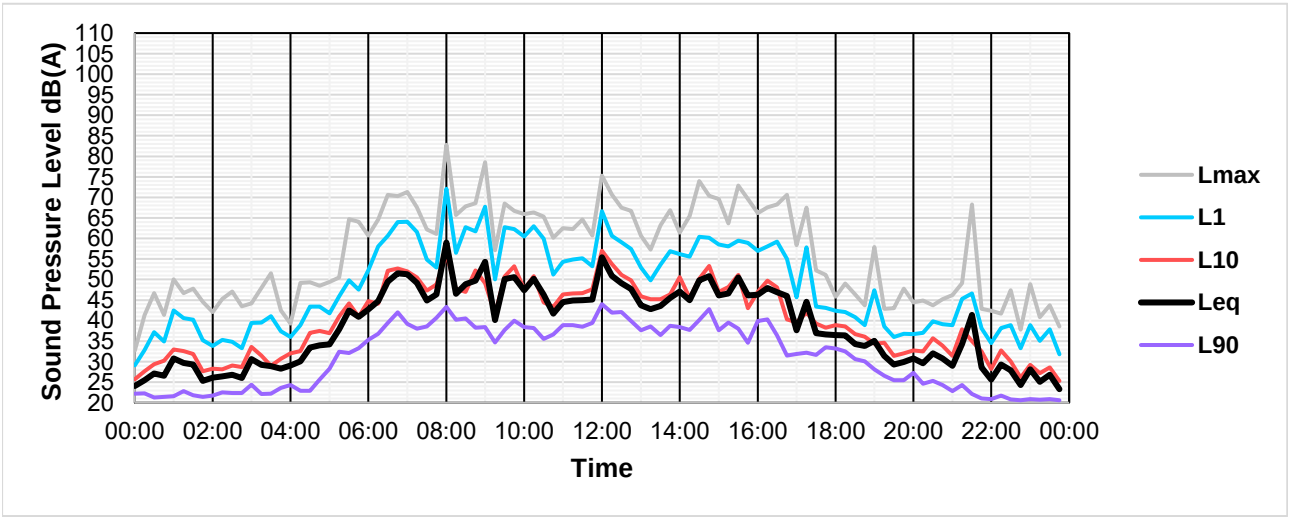
## Unattended Noise Measurements
## Wednesday 21 June 2023



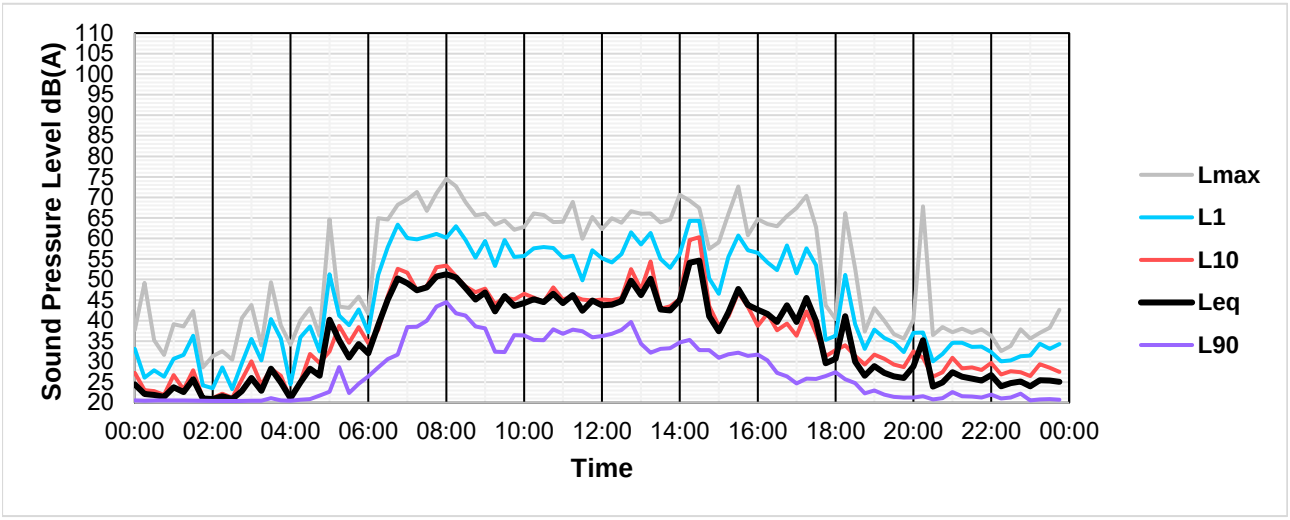

## Unattended Noise Measurements
## Thursday 22 June 2023



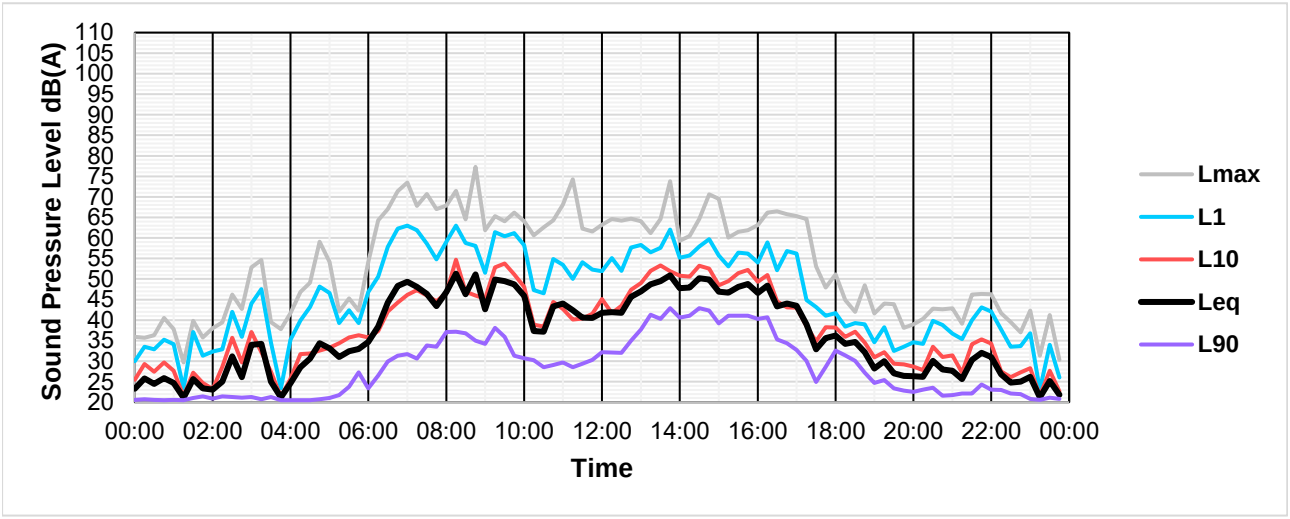

## Unattended Noise Measurements
## Friday 23 June 2023



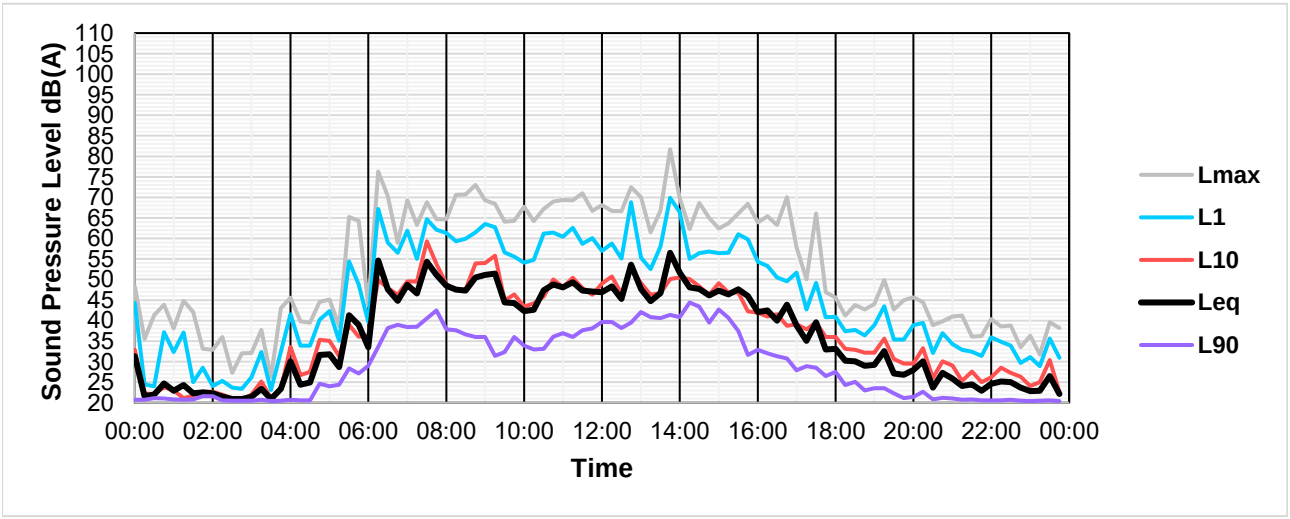
## Unattended Noise Measurements
## Saturday 24 June 2023



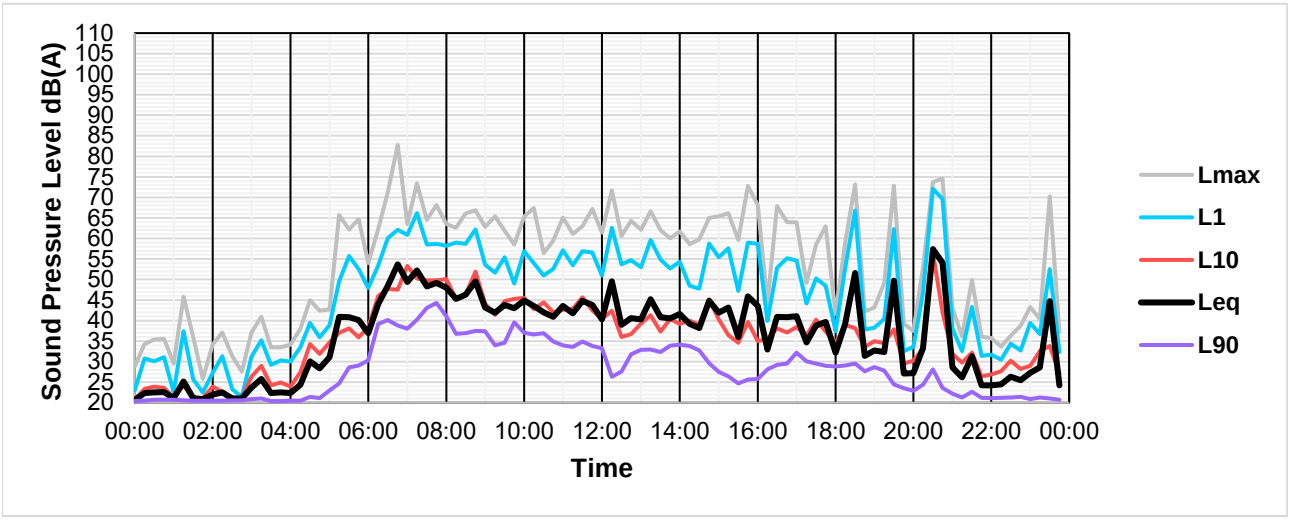

## Unattended Noise Measurements
## Sunday 25 June 2023



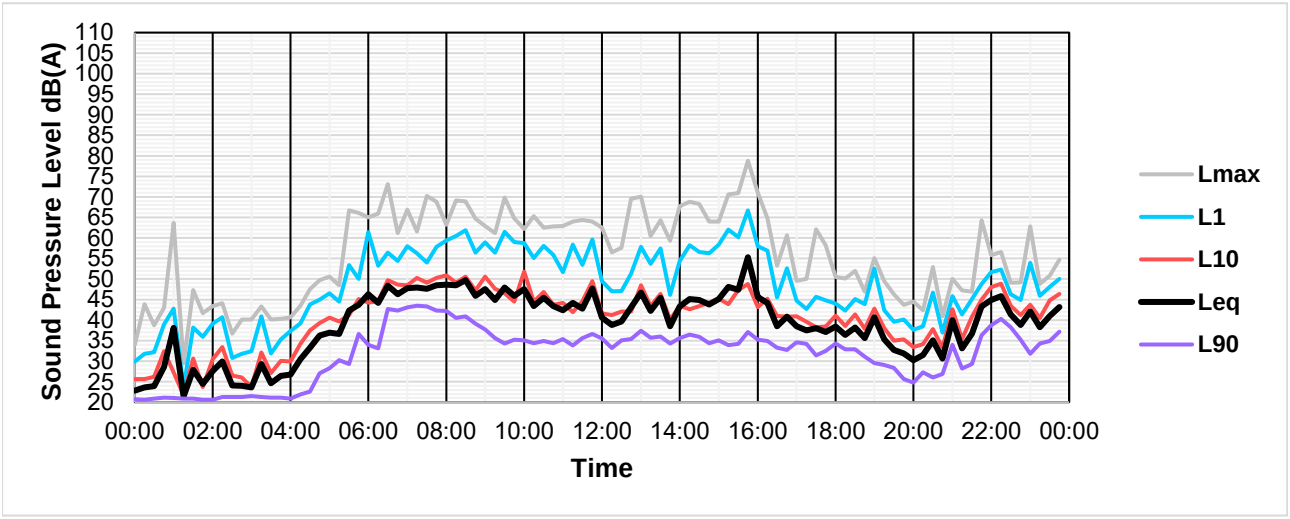

## Unattended Noise Measurements
## Monday 26 June 2023



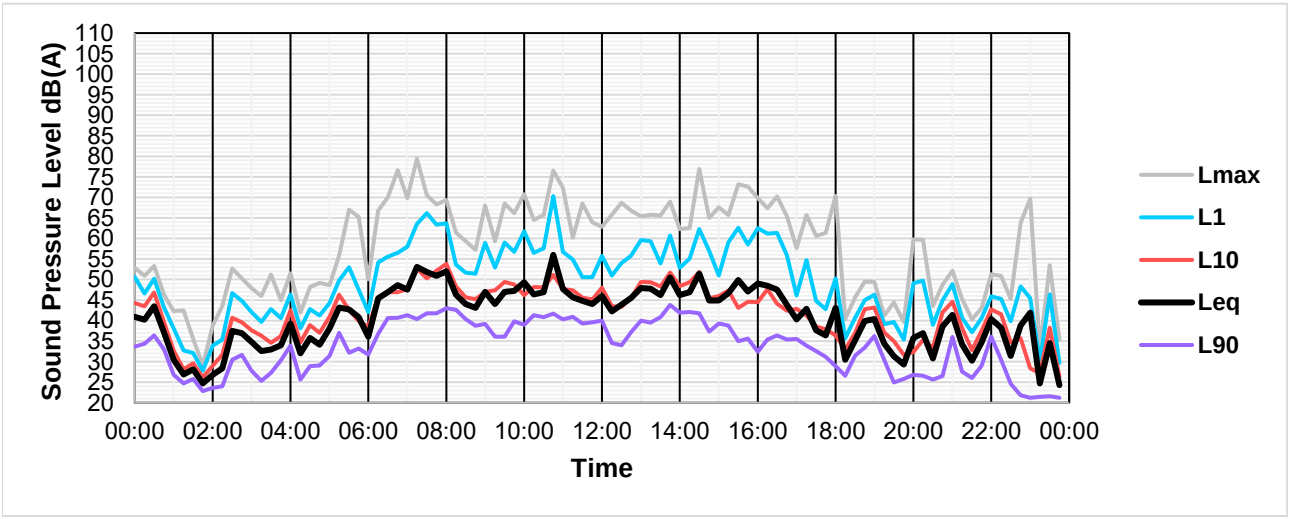
## Unattended Noise Measurements
## Tuesday 27 June 2023



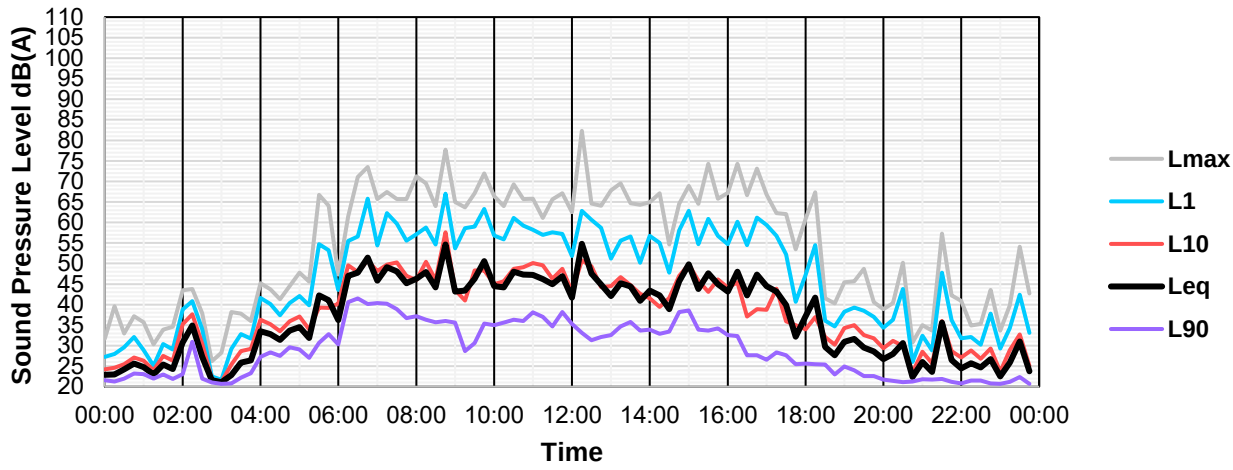

## Unattended Noise Measurements
## Wednesday 28 June 2023



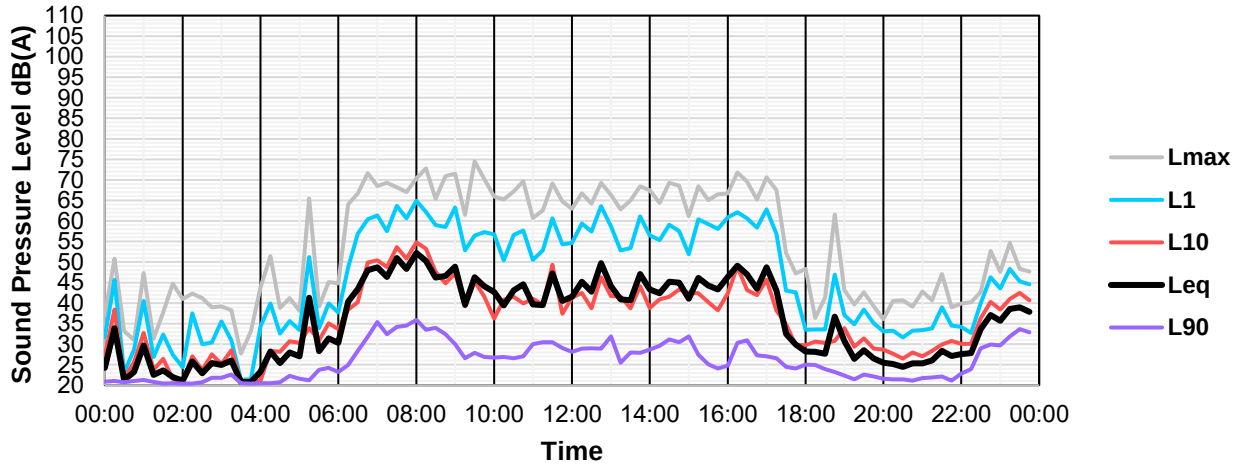

## Unattended Noise Measurements
## Thursday 29 June 2023



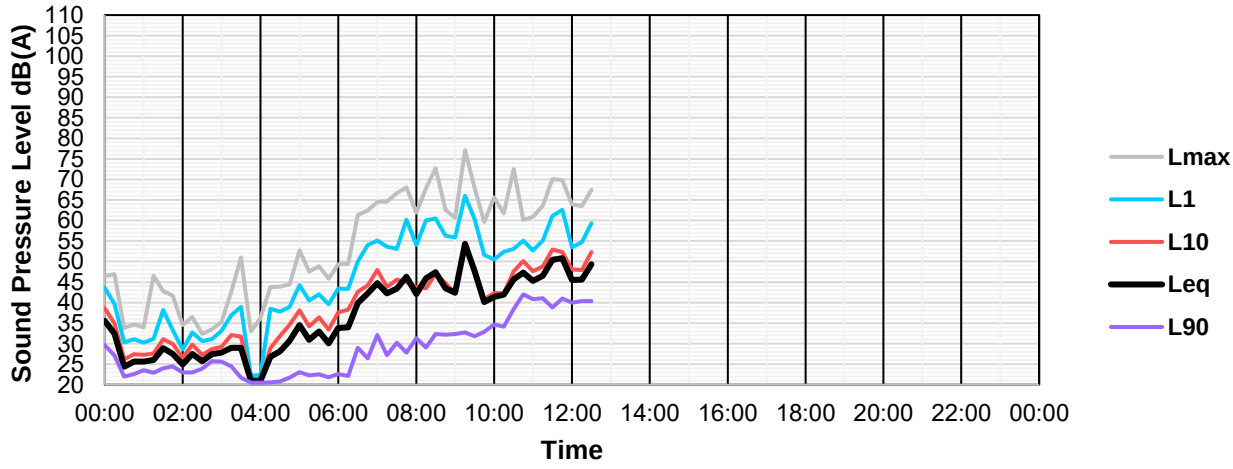
## Unattended Noise Measurements
## Friday 30 June 2023




## Unattended Noise Measurements
## Saturday 1 July 2023




## Unattended Noise Measurements
## Sunday 2 July 2023



# Appendix E – Operational Noise Level

Boonenne Timbers
Predicted Operational Noise Levels at Adjacent Uses
From Activities at Existing Development

| Receiver Name | Floor | Facade | Leq,adj,1h Day dB(A) | Leq,adj,1h Evening dB(A) | Leq,adj,1h Night dB(A) | Leq,adj,11h Day dB(A) | Leq,adj,4h Evening dB(A) | Leq,adj,9h Night dB(A) |
|---|---|---|---|---|---|---|---|---|
| 156 Boonenne Road | GF | S | 44 | | 38 | 40 | | 28 |
| 169 Boonenne Road | GF | N | 39 | | 36 | 36 | | 27 |
| 186 Boonenne Road | GF | S | 42 | | 35 | 38 | | 26 |

# Boonenne Timbers
# ISO9613 Calculation Method
# Predicted Operational Noise Levels at Adjacent Uses
# From Activities at Existing Development

**Legend**

| | | |
|---|---|---|
| Source | | Source name |
| Source type | | Type of source (point, line, area) |
| time slice | | Name of time slice |
| Li | dB(A) | Level inside |
| R'w | dB | Rated transmission loss |
| L'w | dB(A) | Sound power per m, m² |
| Lw | dB(A) | Sound power per unit |
| l or A | m,m² | Size of source (Length or area) |
| KI | dB | Correction for source impulsiveness |
| KT | dB | Correction for source tonality |
| Ko | dB | Correction for propagation in limited spacial angle |
| S | m | Distance source - receiver |
| Adiv | dB | Mean attenuation due to geometrical spreading |
| Agr | dB | Mean attenuation due to ground effect |
| Abar | dB | Mean attenuation due to screening |
| Aatm | dB | Mean attenuation due to air absorption |
| Amisc | dB | Mean attenuation due to foliage, industrial areas and building areas |
| ADI | dB | Mean directivity correction |
| dLrefl | dB(A) | Level increase due to reflections |
| Ls | dB(A) | Unassessed sound pressure level at receiver Ls=Lw+Ko+ADI+Adiv+Agr+Abar+Aatm+Afol_site_house+Awind+dLrefl |
| dLw | dB | Correction due to source operation time |
| Cmet | dB | Meteorological correction |
| ZR | dB | Correction for rest periods |
| Lr | dB(A) | Assessed level of time slice |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Existing Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dB(A) | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Receiver: 156 Boonenne Road Floor: GF Dir: S Leq,ajd,1h,Day: 44 dB(A) Leq,adj,1h,Evening: dB(A) Leq,adj,1h,Night: 38 dB(A) Leq,adj,11h,Day: 40 dB(A) Leq,adj,4h,Evening: dB(A) Leq,adj,9h,Night: 28 dB(A) | | | | | | | | | | | | | | | | | | | | | | | |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 422.67 | -63.5 | -2.0 | -3.2 | -1.7 | 0.00 | 0.0 | 0.1 | 12.9 | 0.0 | 0.0 | 0.0 | 12.9 |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 422.67 | -63.5 | -2.0 | -3.2 | -1.7 | 0.00 | 0.0 | 0.1 | 12.9 | | | | |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 422.67 | -63.5 | -2.0 | -3.2 | -1.7 | 0.00 | 0.0 | 0.1 | 12.9 | 0.8 | 0.0 | 0.0 | 13.7 |
| Carpark | PLot | Leq,adj,11 | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 422.67 | -63.5 | -2.0 | -3.2 | -1.7 | 0.00 | 0.0 | 0.1 | 12.9 | -0.6 | 0.0 | 0.0 | 12.2 |
| Carpark | PLot | Leq,adj,4h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 422.67 | -63.5 | -2.0 | -3.2 | -1.7 | 0.00 | 0.0 | 0.1 | 12.9 | | 0.0 | | |
| Carpark | PLot | Leq,adj,9h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 422.67 | -63.5 | -2.0 | -3.2 | -1.7 | 0.00 | 0.0 | 0.1 | 12.9 | -8.8 | 0.0 | 0.0 | 4.1 |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 326.86 | -61.3 | -1.2 | -4.1 | -4.5 | 0.00 | 0.0 | 0.0 | 42.9 | -4.8 | 0.0 | 0.0 | 43.1 |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 326.86 | -61.3 | -1.2 | -4.1 | -4.5 | 0.00 | 0.0 | 0.0 | 42.9 | | | | |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 326.86 | -61.3 | -1.2 | -4.1 | -4.5 | 0.00 | 0.0 | 0.0 | 42.9 | | 0.0 | | |
| Chainsaw | Point | Leq,adj,11 | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 326.86 | -61.3 | -1.2 | -4.1 | -4.5 | 0.00 | 0.0 | 0.0 | 42.9 | -10.4 | 0.0 | 0.0 | 37.5 |
| Chainsaw | Point | Leq,adj,4h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 326.86 | -61.3 | -1.2 | -4.1 | -4.5 | 0.00 | 0.0 | 0.0 | 42.9 | | 0.0 | | |
| Chainsaw | Point | Leq,adj,9h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 326.86 | -61.3 | -1.2 | -4.1 | -4.5 | 0.00 | 0.0 | 0.0 | 42.9 | | 0.0 | | |
| Circular Saw 1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 442.64 | -63.9 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.3 | -10.0 | 0.0 | 0.0 | 21.3 |
| Circular Saw 1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 442.64 | -63.9 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.3 | | | | |
| Circular Saw 1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 442.64 | -63.9 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.3 | -10.0 | 0.0 | 0.0 | 21.3 |
| Circular Saw 1 | Point | Leq,adj,11 | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 442.64 | -63.9 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.3 | -11.4 | 0.0 | 0.0 | 19.9 |
| Circular Saw 1 | Point | Leq,adj,4h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 442.64 | -63.9 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.3 | | 0.0 | | |
| Circular Saw 1 | Point | Leq,adj,9h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 442.64 | -63.9 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.3 | -19.5 | 0.0 | 0.0 | 11.8 |
| Circular Saw 2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 445.71 | -64.0 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.2 | -10.0 | 0.0 | 0.0 | 21.2 |
| Circular Saw 2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 445.71 | -64.0 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.2 | | | | |
| Circular Saw 2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 445.71 | -64.0 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.2 | -10.0 | 0.0 | 0.0 | 21.2 |
| Circular Saw 2 | Point | Leq,adj,11 | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 445.71 | -64.0 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.2 | -11.4 | 0.0 | 0.0 | 19.8 |
| Circular Saw 2 | Point | Leq,adj,4h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 445.71 | -64.0 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.2 | | 0.0 | | |
| Circular Saw 2 | Point | Leq,adj,9h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 445.71 | -64.0 | -0.7 | -4.3 | -4.1 | 0.00 | 0.0 | 0.0 | 26.2 | -19.5 | 0.0 | 0.0 | 11.7 |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 448.01 | -64.0 | -0.1 | -4.4 | -2.1 | 0.00 | 0.0 | 0.1 | 17.8 | 0.0 | 0.0 | 0.0 | 17.8 |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 448.01 | -64.0 | -0.1 | -4.4 | -2.1 | 0.00 | 0.0 | 0.1 | 17.8 | | | | |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 448.01 | -64.0 | -0.1 | -4.4 | -2.1 | 0.00 | 0.0 | 0.1 | 17.8 | 0.0 | 0.0 | 0.0 | 17.8 |
| Conveyor Belt | Area | Leq,adj,11 | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 448.01 | -64.0 | -0.1 | -4.4 | -2.1 | 0.00 | 0.0 | 0.1 | 17.8 | -1.4 | 0.0 | 0.0 | 16.4 |
| Conveyor Belt | Area | Leq,adj,4h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 448.01 | -64.0 | -0.1 | -4.4 | -2.1 | 0.00 | 0.0 | 0.1 | 17.8 | | 0.0 | | |
| Conveyor Belt | Area | Leq,adj,9h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 448.01 | -64.0 | -0.1 | -4.4 | -2.1 | 0.00 | 0.0 | 0.1 | 17.8 | -9.5 | 0.0 | 0.0 | 8.3 |
| Flexi North-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 451.66 | -64.1 | -4.8 | -1.8 | -0.6 | 0.00 | 0.0 | 0.0 | 14.4 | 0.0 | 0.0 | 0.0 | 19.4 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Existing Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dB(A) | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Flexi North-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 451.66 | -64.1 | -4.8 | -1.8 | -0.6 | 0.00 | 0.0 | 0.0 | 14.4 | | | | |
| Flexi North-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 451.66 | -64.1 | -4.8 | -1.8 | -0.6 | 0.00 | 0.0 | 0.0 | 14.4 | 0.0 | 0.0 | 0.0 | 19.4 |
| Flexi North-Noise Breakout | Area | Leq,adj,11 | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 451.66 | -64.1 | -4.8 | -1.8 | -0.6 | 0.00 | 0.0 | 0.0 | 14.4 | -1.4 | 0.0 | 0.0 | 18.1 |
| Flexi North-Noise Breakout | Area | Leq,adj,4h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 451.66 | -64.1 | -4.8 | -1.8 | -0.6 | 0.00 | 0.0 | 0.0 | 14.4 | | 0.0 | | |
| Flexi North-Noise Breakout | Area | Leq,adj,9h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 451.66 | -64.1 | -4.8 | -1.8 | -0.6 | 0.00 | 0.0 | 0.0 | 14.4 | -9.5 | 0.0 | 0.0 | 9.9 |
| Flexi South-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 455.09 | -64.2 | -4.8 | -8.0 | -0.3 | 0.00 | 0.0 | 0.0 | 8.5 | 0.0 | 0.0 | 0.0 | 13.5 |
| Flexi South-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 455.09 | -64.2 | -4.8 | -8.0 | -0.3 | 0.00 | 0.0 | 0.0 | 8.5 | | | | |
| Flexi South-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 455.09 | -64.2 | -4.8 | -8.0 | -0.3 | 0.00 | 0.0 | 0.0 | 8.5 | 0.0 | 0.0 | 0.0 | 13.5 |
| Flexi South-Noise Breakout | Area | Leq,adj,11 | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 455.09 | -64.2 | -4.8 | -8.0 | -0.3 | 0.00 | 0.0 | 0.0 | 8.5 | -1.4 | 0.0 | 0.0 | 12.1 |
| Flexi South-Noise Breakout | Area | Leq,adj,4h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 455.09 | -64.2 | -4.8 | -8.0 | -0.3 | 0.00 | 0.0 | 0.0 | 8.5 | | 0.0 | | |
| Flexi South-Noise Breakout | Area | Leq,adj,9h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 455.09 | -64.2 | -4.8 | -8.0 | -0.3 | 0.00 | 0.0 | 0.0 | 8.5 | -9.5 | 0.0 | 0.0 | 3.9 |
| Forklift North | Area | Leq,adj,1h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 300.36 | -60.5 | -1.4 | -3.9 | -1.8 | 0.00 | 0.0 | 0.0 | 24.3 | 0.0 | 0.0 | 0.0 | 29.3 |
| Forklift North | Area | Leq,adj,1h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 300.36 | -60.5 | -1.4 | -3.9 | -1.8 | 0.00 | 0.0 | 0.0 | 24.3 | | | | |
| Forklift North | Area | Leq,adj,1h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 300.36 | -60.5 | -1.4 | -3.9 | -1.8 | 0.00 | 0.0 | 0.0 | 24.3 | 0.0 | 0.0 | 0.0 | 29.3 |
| Forklift North | Area | Leq,adj,11 | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 300.36 | -60.5 | -1.4 | -3.9 | -1.8 | 0.00 | 0.0 | 0.0 | 24.3 | -1.4 | 0.0 | 0.0 | 28.0 |
| Forklift North | Area | Leq,adj,4h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 300.36 | -60.5 | -1.4 | -3.9 | -1.8 | 0.00 | 0.0 | 0.0 | 24.3 | | 0.0 | | |
| Forklift North | Area | Leq,adj,9h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 300.36 | -60.5 | -1.4 | -3.9 | -1.8 | 0.00 | 0.0 | 0.0 | 24.3 | -9.5 | 0.0 | 0.0 | 19.8 |
| Forklift South | Area | Leq,adj,1h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 396.69 | -63.0 | -2.2 | -3.5 | -2.3 | 0.00 | 0.0 | 0.0 | 21.1 | 0.0 | 0.0 | 0.0 | 26.1 |
| Forklift South | Area | Leq,adj,1h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 396.69 | -63.0 | -2.2 | -3.5 | -2.3 | 0.00 | 0.0 | 0.0 | 21.1 | | | | |
| Forklift South | Area | Leq,adj,1h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 396.69 | -63.0 | -2.2 | -3.5 | -2.3 | 0.00 | 0.0 | 0.0 | 21.1 | 0.0 | 0.0 | 0.0 | 26.1 |
| Forklift South | Area | Leq,adj,11 | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 396.69 | -63.0 | -2.2 | -3.5 | -2.3 | 0.00 | 0.0 | 0.0 | 21.1 | -1.4 | 0.0 | 0.0 | 24.7 |
| Forklift South | Area | Leq,adj,4h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 396.69 | -63.0 | -2.2 | -3.5 | -2.3 | 0.00 | 0.0 | 0.0 | 21.1 | | 0.0 | | |
| Forklift South | Area | Leq,adj,9h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 396.69 | -63.0 | -2.2 | -3.5 | -2.3 | 0.00 | 0.0 | 0.0 | 21.1 | -9.5 | 0.0 | 0.0 | 16.6 |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 453.53 | -64.1 | -1.1 | -14.6 | -1.8 | 0.00 | 0.0 | 8.7 | 27.3 | 0.0 | 0.0 | 0.0 | 32.3 |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 453.53 | -64.1 | -1.1 | -14.6 | -1.8 | 0.00 | 0.0 | 8.7 | 27.3 | | | | |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 453.53 | -64.1 | -1.1 | -14.6 | -1.8 | 0.00 | 0.0 | 8.7 | 27.3 | 0.0 | 0.0 | 0.0 | 32.3 |
| Shredder Breakout | Point | Leq,adj,11 | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 453.53 | -64.1 | -1.1 | -14.6 | -1.8 | 0.00 | 0.0 | 8.7 | 27.3 | -1.4 | 0.0 | 0.0 | 30.9 |
| Shredder Breakout | Point | Leq,adj,4h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 453.53 | -64.1 | -1.1 | -14.6 | -1.8 | 0.00 | 0.0 | 8.7 | 27.3 | | 0.0 | | |
| Shredder Breakout | Point | Leq,adj,9h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 453.53 | -64.1 | -1.1 | -14.6 | -1.8 | 0.00 | 0.0 | 8.7 | 27.3 | -9.5 | 0.0 | 0.0 | 22.7 |
| Shredder Shed-Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 453.85 | -64.1 | -4.5 | -2.8 | -0.6 | 0.00 | 0.0 | 0.7 | 22.7 | 0.0 | 0.0 | 0.0 | 27.7 |
| Shredder Shed-Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 453.85 | -64.1 | -4.5 | -2.8 | -0.6 | 0.00 | 0.0 | 0.7 | 22.7 | | | | |
| Shredder Shed-Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 453.85 | -64.1 | -4.5 | -2.8 | -0.6 | 0.00 | 0.0 | 0.7 | 22.7 | 0.0 | 0.0 | 0.0 | 27.7 |
| Shredder Shed-Eastern Facade | Area | Leq,adj,11 | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 453.85 | -64.1 | -4.5 | -2.8 | -0.6 | 0.00 | 0.0 | 0.7 | 22.7 | -1.4 | 0.0 | 0.0 | 26.3 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Existing Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dB(A) | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Shredder Shed-Eastern Facade | Area | Leq,adj,4h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 453.85 | -64.1 | -4.5 | -2.8 | -0.6 | 0.00 | 0.0 | 0.7 | 22.7 | | 0.0 | | |
| Shredder Shed-Eastern Facade | Area | Leq,adj,9h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 453.85 | -64.1 | -4.5 | -2.8 | -0.6 | 0.00 | 0.0 | 0.7 | 22.7 | -9.5 | 0.0 | 0.0 | 18.2 |
| Shredder Shed-Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 451.38 | -64.1 | -4.6 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | 0.0 | 0.0 | 0.0 | 26.8 |
| Shredder Shed-Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 451.38 | -64.1 | -4.6 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | | | | |
| Shredder Shed-Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 451.38 | -64.1 | -4.6 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | 0.0 | 0.0 | 0.0 | 26.8 |
| Shredder Shed-Northern Facade | Area | Leq,adj,11 | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 451.38 | -64.1 | -4.6 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | -1.4 | 0.0 | 0.0 | 25.4 |
| Shredder Shed-Northern Facade | Area | Leq,adj,4h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 451.38 | -64.1 | -4.6 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | | 0.0 | | |
| Shredder Shed-Northern Facade | Area | Leq,adj,9h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 451.38 | -64.1 | -4.6 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | -9.5 | 0.0 | 0.0 | 17.3 |
| Shredder Shed-Roof | Area | Leq,adj,1h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 454.10 | -64.1 | -4.2 | -1.9 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | 0.0 | 0.0 | 0.0 | 26.8 |
| Shredder Shed-Roof | Area | Leq,adj,1h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 454.10 | -64.1 | -4.2 | -1.9 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | | | | |
| Shredder Shed-Roof | Area | Leq,adj,1h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 454.10 | -64.1 | -4.2 | -1.9 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | 0.0 | 0.0 | 0.0 | 26.8 |
| Shredder Shed-Roof | Area | Leq,adj,11 | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 454.10 | -64.1 | -4.2 | -1.9 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | -1.4 | 0.0 | 0.0 | 25.4 |
| Shredder Shed-Roof | Area | Leq,adj,4h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 454.10 | -64.1 | -4.2 | -1.9 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | | 0.0 | | |
| Shredder Shed-Roof | Area | Leq,adj,9h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 454.10 | -64.1 | -4.2 | -1.9 | -0.7 | 0.00 | 0.0 | 0.0 | 21.8 | -9.5 | 0.0 | 0.0 | 17.2 |
| Shredder Shed-Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 456.93 | -64.2 | -4.6 | -9.3 | -0.3 | 0.00 | 0.0 | 0.0 | 14.6 | 0.0 | 0.0 | 0.0 | 19.6 |
| Shredder Shed-Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 456.93 | -64.2 | -4.6 | -9.3 | -0.3 | 0.00 | 0.0 | 0.0 | 14.6 | | | | |
| Shredder Shed-Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 456.93 | -64.2 | -4.6 | -9.3 | -0.3 | 0.00 | 0.0 | 0.0 | 14.6 | 0.0 | 0.0 | 0.0 | 19.6 |
| Shredder Shed-Southern Facade | Area | Leq,adj,11 | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 456.93 | -64.2 | -4.6 | -9.3 | -0.3 | 0.00 | 0.0 | 0.0 | 14.6 | -1.4 | 0.0 | 0.0 | 18.2 |
| Shredder Shed-Southern Facade | Area | Leq,adj,4h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 456.93 | -64.2 | -4.6 | -9.3 | -0.3 | 0.00 | 0.0 | 0.0 | 14.6 | | 0.0 | | |
| Shredder Shed-Southern Facade | Area | Leq,adj,9h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 456.93 | -64.2 | -4.6 | -9.3 | -0.3 | 0.00 | 0.0 | 0.0 | 14.6 | -9.5 | 0.0 | 0.0 | 10.0 |
| Shredder Shed-Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 454.58 | -64.1 | -4.6 | -9.0 | -0.3 | 0.00 | 0.0 | 0.0 | 16.0 | 0.0 | 0.0 | 0.0 | 21.0 |
| Shredder Shed-Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 454.58 | -64.1 | -4.6 | -9.0 | -0.3 | 0.00 | 0.0 | 0.0 | 16.0 | | | | |
| Shredder Shed-Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 454.58 | -64.1 | -4.6 | -9.0 | -0.3 | 0.00 | 0.0 | 0.0 | 16.0 | 0.0 | 0.0 | 0.0 | 21.0 |
| Shredder Shed-Western Facade | Area | Leq,adj,11 | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 454.58 | -64.1 | -4.6 | -9.0 | -0.3 | 0.00 | 0.0 | 0.0 | 16.0 | -1.4 | 0.0 | 0.0 | 19.6 |
| Shredder Shed-Western Facade | Area | Leq,adj,4h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 454.58 | -64.1 | -4.6 | -9.0 | -0.3 | 0.00 | 0.0 | 0.0 | 16.0 | | 0.0 | | |
| Shredder Shed-Western Facade | Area | Leq,adj,9h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 454.58 | -64.1 | -4.6 | -9.0 | -0.3 | 0.00 | 0.0 | 0.0 | 16.0 | -9.5 | 0.0 | 0.0 | 11.4 |
| Truck Movements | Line | Leq,adj,1h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 276.38 | -59.8 | -2.1 | -3.5 | -1.4 | 0.00 | 0.0 | 0.0 | 18.7 | 7.8 | 0.0 | 0.0 | 26.5 |
| Truck Movements | Line | Leq,adj,1h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 276.38 | -59.8 | -2.1 | -3.5 | -1.4 | 0.00 | 0.0 | 0.0 | 18.7 | | | | |
| Truck Movements | Line | Leq,adj,1h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 276.38 | -59.8 | -2.1 | -3.5 | -1.4 | 0.00 | 0.0 | 0.0 | 18.7 | 7.8 | 0.0 | 0.0 | 26.5 |
| Truck Movements | Line | Leq,adj,11 | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 276.38 | -59.8 | -2.1 | -3.5 | -1.4 | 0.00 | 0.0 | 0.0 | 18.7 | 6.7 | 0.0 | 0.0 | 25.4 |
| Truck Movements | Line | Leq,adj,4h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 276.38 | -59.8 | -2.1 | -3.5 | -1.4 | 0.00 | 0.0 | 0.0 | 18.7 | | 0.0 | | |
| Truck Movements | Line | Leq,adj,9h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 276.38 | -59.8 | -2.1 | -3.5 | -1.4 | 0.00 | 0.0 | 0.0 | 18.7 | -1.8 | 0.0 | 0.0 | 17.0 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Existing Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dB(A) | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Receiver: 169 Boonenne Road Floor: GF Dir: N Leq,ajd,1h,Day: 39 dB(A) Leq,adj,1h,Evening: dB(A) Leq,adj,1h,Night: 36 dB(A) Leq,adj,11h,Day: 36 dB(A) Leq,adj,4h,Evening: dB(A) Leq,adj,9h,Night: 27 dB(A) | | | | | | | | | | | | | | | | | | | | | | | |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 534.77 | -65.6 | -2.1 | -2.3 | -2.5 | 0.00 | 0.0 | 0.0 | 10.7 | 0.0 | 0.0 | 0.0 | 10.7 |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 534.77 | -65.6 | -2.1 | -2.3 | -2.5 | 0.00 | 0.0 | 0.0 | 10.7 | | | | |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 534.77 | -65.6 | -2.1 | -2.3 | -2.5 | 0.00 | 0.0 | 0.0 | 10.7 | 0.8 | 0.0 | 0.0 | 11.5 |
| Carpark | PLot | Leq,adj,11 | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 534.77 | -65.6 | -2.1 | -2.3 | -2.5 | 0.00 | 0.0 | 0.0 | 10.7 | -0.6 | 0.0 | 0.0 | 10.1 |
| Carpark | PLot | Leq,adj,4h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 534.77 | -65.6 | -2.1 | -2.3 | -2.5 | 0.00 | 0.0 | 0.0 | 10.7 | | 0.0 | | |
| Carpark | PLot | Leq,adj,9h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 534.77 | -65.6 | -2.1 | -2.3 | -2.5 | 0.00 | 0.0 | 0.0 | 10.7 | -8.8 | 0.0 | 0.0 | 2.0 |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 630.59 | -67.0 | -1.2 | -4.1 | -6.5 | 0.00 | 0.0 | 0.0 | 35.2 | -4.8 | 0.0 | 0.0 | 35.4 |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 630.59 | -67.0 | -1.2 | -4.1 | -6.5 | 0.00 | 0.0 | 0.0 | 35.2 | | | | |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 630.59 | -67.0 | -1.2 | -4.1 | -6.5 | 0.00 | 0.0 | 0.0 | 35.2 | | 0.0 | | |
| Chainsaw | Point | Leq,adj,11 | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 630.59 | -67.0 | -1.2 | -4.1 | -6.5 | 0.00 | 0.0 | 0.0 | 35.2 | -10.4 | 0.0 | 0.0 | 29.8 |
| Chainsaw | Point | Leq,adj,4h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 630.59 | -67.0 | -1.2 | -4.1 | -6.5 | 0.00 | 0.0 | 0.0 | 35.2 | | 0.0 | | |
| Chainsaw | Point | Leq,adj,9h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 630.59 | -67.0 | -1.2 | -4.1 | -6.5 | 0.00 | 0.0 | 0.0 | 35.2 | | 0.0 | | |
| Circular Saw 1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 512.97 | -65.2 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | -10.0 | 0.0 | 0.0 | 19.7 |
| Circular Saw 1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 512.97 | -65.2 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | | | | |
| Circular Saw 1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 512.97 | -65.2 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | -10.0 | 0.0 | 0.0 | 19.7 |
| Circular Saw 1 | Point | Leq,adj,11 | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 512.97 | -65.2 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | -11.4 | 0.0 | 0.0 | 18.3 |
| Circular Saw 1 | Point | Leq,adj,4h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 512.97 | -65.2 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | | 0.0 | | |
| Circular Saw 1 | Point | Leq,adj,9h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 512.97 | -65.2 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | -19.5 | 0.0 | 0.0 | 10.1 |
| Circular Saw 2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 510.28 | -65.1 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | -10.0 | 0.0 | 0.0 | 19.7 |
| Circular Saw 2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 510.28 | -65.1 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | | | | |
| Circular Saw 2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 510.28 | -65.1 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | -10.0 | 0.0 | 0.0 | 19.7 |
| Circular Saw 2 | Point | Leq,adj,11 | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 510.28 | -65.1 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | -11.4 | 0.0 | 0.0 | 18.3 |
| Circular Saw 2 | Point | Leq,adj,4h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 510.28 | -65.1 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | | 0.0 | | |
| Circular Saw 2 | Point | Leq,adj,9h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 510.28 | -65.1 | -0.7 | -4.3 | -4.5 | 0.00 | 0.0 | 0.0 | 24.7 | -19.5 | 0.0 | 0.0 | 10.2 |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 507.63 | -65.1 | 0.0 | -4.3 | -2.3 | 0.00 | 0.0 | 0.1 | 16.7 | 0.0 | 0.0 | 0.0 | 16.7 |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 507.63 | -65.1 | 0.0 | -4.3 | -2.3 | 0.00 | 0.0 | 0.1 | 16.7 | | | | |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 507.63 | -65.1 | 0.0 | -4.3 | -2.3 | 0.00 | 0.0 | 0.1 | 16.7 | 0.0 | 0.0 | 0.0 | 16.7 |
| Conveyor Belt | Area | Leq,adj,11 | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 507.63 | -65.1 | 0.0 | -4.3 | -2.3 | 0.00 | 0.0 | 0.1 | 16.7 | -1.4 | 0.0 | 0.0 | 15.3 |
| Conveyor Belt | Area | Leq,adj,4h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 507.63 | -65.1 | 0.0 | -4.3 | -2.3 | 0.00 | 0.0 | 0.1 | 16.7 | | 0.0 | | |
| Conveyor Belt | Area | Leq,adj,9h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 507.63 | -65.1 | 0.0 | -4.3 | -2.3 | 0.00 | 0.0 | 0.1 | 16.7 | -9.5 | 0.0 | 0.0 | 7.2 |
| Flexi North-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 504.89 | -65.1 | -5.0 | -3.9 | -0.3 | 0.00 | 0.0 | 0.0 | 11.4 | 0.0 | 0.0 | 0.0 | 16.4 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Existing Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dB(A) | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Flexi North-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 504.89 | -65.1 | -5.0 | -3.9 | -0.3 | 0.00 | 0.0 | 0.0 | 11.4 | | | | |
| Flexi North-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 504.89 | -65.1 | -5.0 | -3.9 | -0.3 | 0.00 | 0.0 | 0.0 | 11.4 | 0.0 | 0.0 | 0.0 | 16.4 |
| Flexi North-Noise Breakout | Area | Leq,adj,11 | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 504.89 | -65.1 | -5.0 | -3.9 | -0.3 | 0.00 | 0.0 | 0.0 | 11.4 | -1.4 | 0.0 | 0.0 | 15.1 |
| Flexi North-Noise Breakout | Area | Leq,adj,4h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 504.89 | -65.1 | -5.0 | -3.9 | -0.3 | 0.00 | 0.0 | 0.0 | 11.4 | | 0.0 | | |
| Flexi North-Noise Breakout | Area | Leq,adj,9h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 504.89 | -65.1 | -5.0 | -3.9 | -0.3 | 0.00 | 0.0 | 0.0 | 11.4 | -9.5 | 0.0 | 0.0 | 6.9 |
| Flexi South-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 501.40 | -65.0 | -5.0 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 13.0 | 0.0 | 0.0 | 0.0 | 18.0 |
| Flexi South-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 501.40 | -65.0 | -5.0 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 13.0 | | | | |
| Flexi South-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 501.40 | -65.0 | -5.0 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 13.0 | 0.0 | 0.0 | 0.0 | 18.0 |
| Flexi South-Noise Breakout | Area | Leq,adj,11 | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 501.40 | -65.0 | -5.0 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 13.0 | -1.4 | 0.0 | 0.0 | 16.6 |
| Flexi South-Noise Breakout | Area | Leq,adj,4h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 501.40 | -65.0 | -5.0 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 13.0 | | 0.0 | | |
| Flexi South-Noise Breakout | Area | Leq,adj,9h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 501.40 | -65.0 | -5.0 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 13.0 | -9.5 | 0.0 | 0.0 | 8.5 |
| Forklift North | Area | Leq,adj,1h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 656.12 | -67.3 | -1.4 | -3.1 | -3.6 | 0.00 | 0.0 | 0.0 | 16.5 | 0.0 | 0.0 | 0.0 | 21.5 |
| Forklift North | Area | Leq,adj,1h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 656.12 | -67.3 | -1.4 | -3.1 | -3.6 | 0.00 | 0.0 | 0.0 | 16.5 | | | | |
| Forklift North | Area | Leq,adj,1h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 656.12 | -67.3 | -1.4 | -3.1 | -3.6 | 0.00 | 0.0 | 0.0 | 16.5 | 0.0 | 0.0 | 0.0 | 21.5 |
| Forklift North | Area | Leq,adj,11 | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 656.12 | -67.3 | -1.4 | -3.1 | -3.6 | 0.00 | 0.0 | 0.0 | 16.5 | -1.4 | 0.0 | 0.0 | 20.2 |
| Forklift North | Area | Leq,adj,4h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 656.12 | -67.3 | -1.4 | -3.1 | -3.6 | 0.00 | 0.0 | 0.0 | 16.5 | | 0.0 | | |
| Forklift North | Area | Leq,adj,9h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 656.12 | -67.3 | -1.4 | -3.1 | -3.6 | 0.00 | 0.0 | 0.0 | 16.5 | -9.5 | 0.0 | 0.0 | 12.0 |
| Forklift South | Area | Leq,adj,1h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 557.08 | -65.9 | -1.9 | -3.6 | -2.9 | 0.00 | 0.0 | 0.0 | 17.7 | 0.0 | 0.0 | 0.0 | 22.7 |
| Forklift South | Area | Leq,adj,1h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 557.08 | -65.9 | -1.9 | -3.6 | -2.9 | 0.00 | 0.0 | 0.0 | 17.7 | | | | |
| Forklift South | Area | Leq,adj,1h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 557.08 | -65.9 | -1.9 | -3.6 | -2.9 | 0.00 | 0.0 | 0.0 | 17.7 | 0.0 | 0.0 | 0.0 | 22.7 |
| Forklift South | Area | Leq,adj,11 | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 557.08 | -65.9 | -1.9 | -3.6 | -2.9 | 0.00 | 0.0 | 0.0 | 17.7 | -1.4 | 0.0 | 0.0 | 21.3 |
| Forklift South | Area | Leq,adj,4h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 557.08 | -65.9 | -1.9 | -3.6 | -2.9 | 0.00 | 0.0 | 0.0 | 17.7 | | 0.0 | | |
| Forklift South | Area | Leq,adj,9h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 557.08 | -65.9 | -1.9 | -3.6 | -2.9 | 0.00 | 0.0 | 0.0 | 17.7 | -9.5 | 0.0 | 0.0 | 13.2 |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 503.01 | -65.0 | -1.0 | -9.3 | -2.3 | 0.00 | 0.0 | 4.1 | 26.6 | 0.0 | 0.0 | 0.0 | 31.6 |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 503.01 | -65.0 | -1.0 | -9.3 | -2.3 | 0.00 | 0.0 | 4.1 | 26.6 | | | | |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 503.01 | -65.0 | -1.0 | -9.3 | -2.3 | 0.00 | 0.0 | 4.1 | 26.6 | 0.0 | 0.0 | 0.0 | 31.6 |
| Shredder Breakout | Point | Leq,adj,11 | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 503.01 | -65.0 | -1.0 | -9.3 | -2.3 | 0.00 | 0.0 | 4.1 | 26.6 | -1.4 | 0.0 | 0.0 | 30.2 |
| Shredder Breakout | Point | Leq,adj,4h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 503.01 | -65.0 | -1.0 | -9.3 | -2.3 | 0.00 | 0.0 | 4.1 | 26.6 | | 0.0 | | |
| Shredder Breakout | Point | Leq,adj,9h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 503.01 | -65.0 | -1.0 | -9.3 | -2.3 | 0.00 | 0.0 | 4.1 | 26.6 | -9.5 | 0.0 | 0.0 | 22.1 |
| Shredder Shed-Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.88 | -65.0 | -4.7 | -3.2 | -0.4 | 0.00 | 0.0 | 0.0 | 20.8 | 0.0 | 0.0 | 0.0 | 25.8 |
| Shredder Shed-Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.88 | -65.0 | -4.7 | -3.2 | -0.4 | 0.00 | 0.0 | 0.0 | 20.8 | | | | |
| Shredder Shed-Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.88 | -65.0 | -4.7 | -3.2 | -0.4 | 0.00 | 0.0 | 0.0 | 20.8 | 0.0 | 0.0 | 0.0 | 25.8 |
| Shredder Shed-Eastern Facade | Area | Leq,adj,11 | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.88 | -65.0 | -4.7 | -3.2 | -0.4 | 0.00 | 0.0 | 0.0 | 20.8 | -1.4 | 0.0 | 0.0 | 24.4 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Existing Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dB(A) | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Shredder Shed-Eastern Facade | Area | Leq,adj,4h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.88 | -65.0 | -4.7 | -3.2 | -0.4 | 0.00 | 0.0 | 0.0 | 20.8 | | 0.0 | | |
| Shredder Shed-Eastern Facade | Area | Leq,adj,9h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.88 | -65.0 | -4.7 | -3.2 | -0.4 | 0.00 | 0.0 | 0.0 | 20.8 | -9.5 | 0.0 | 0.0 | 16.3 |
| Shredder Shed-Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 505.49 | -65.1 | -4.8 | -3.6 | -0.2 | 0.00 | 0.0 | 0.0 | 19.3 | 0.0 | 0.0 | 0.0 | 24.3 |
| Shredder Shed-Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 505.49 | -65.1 | -4.8 | -3.6 | -0.2 | 0.00 | 0.0 | 0.0 | 19.3 | | | | |
| Shredder Shed-Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 505.49 | -65.1 | -4.8 | -3.6 | -0.2 | 0.00 | 0.0 | 0.0 | 19.3 | 0.0 | 0.0 | 0.0 | 24.3 |
| Shredder Shed-Northern Facade | Area | Leq,adj,11 | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 505.49 | -65.1 | -4.8 | -3.6 | -0.2 | 0.00 | 0.0 | 0.0 | 19.3 | -1.4 | 0.0 | 0.0 | 22.9 |
| Shredder Shed-Northern Facade | Area | Leq,adj,4h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 505.49 | -65.1 | -4.8 | -3.6 | -0.2 | 0.00 | 0.0 | 0.0 | 19.3 | | 0.0 | | |
| Shredder Shed-Northern Facade | Area | Leq,adj,9h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 505.49 | -65.1 | -4.8 | -3.6 | -0.2 | 0.00 | 0.0 | 0.0 | 19.3 | -9.5 | 0.0 | 0.0 | 14.7 |
| Shredder Shed-Roof | Area | Leq,adj,1h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 502.76 | -65.0 | -4.1 | -2.0 | -0.8 | 0.00 | 0.0 | 0.0 | 20.7 | 0.0 | 0.0 | 0.0 | 25.7 |
| Shredder Shed-Roof | Area | Leq,adj,1h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 502.76 | -65.0 | -4.1 | -2.0 | -0.8 | 0.00 | 0.0 | 0.0 | 20.7 | | | | |
| Shredder Shed-Roof | Area | Leq,adj,1h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 502.76 | -65.0 | -4.1 | -2.0 | -0.8 | 0.00 | 0.0 | 0.0 | 20.7 | 0.0 | 0.0 | 0.0 | 25.7 |
| Shredder Shed-Roof | Area | Leq,adj,11 | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 502.76 | -65.0 | -4.1 | -2.0 | -0.8 | 0.00 | 0.0 | 0.0 | 20.7 | -1.4 | 0.0 | 0.0 | 24.3 |
| Shredder Shed-Roof | Area | Leq,adj,4h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 502.76 | -65.0 | -4.1 | -2.0 | -0.8 | 0.00 | 0.0 | 0.0 | 20.7 | | 0.0 | | |
| Shredder Shed-Roof | Area | Leq,adj,9h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 502.76 | -65.0 | -4.1 | -2.0 | -0.8 | 0.00 | 0.0 | 0.0 | 20.7 | -9.5 | 0.0 | 0.0 | 16.1 |
| Shredder Shed-Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 499.84 | -65.0 | -4.7 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 20.6 | 0.0 | 0.0 | 0.0 | 25.6 |
| Shredder Shed-Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 499.84 | -65.0 | -4.7 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 20.6 | | | | |
| Shredder Shed-Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 499.84 | -65.0 | -4.7 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 20.6 | 0.0 | 0.0 | 0.0 | 25.6 |
| Shredder Shed-Southern Facade | Area | Leq,adj,11 | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 499.84 | -65.0 | -4.7 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 20.6 | -1.4 | 0.0 | 0.0 | 24.2 |
| Shredder Shed-Southern Facade | Area | Leq,adj,4h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 499.84 | -65.0 | -4.7 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 20.6 | | 0.0 | | |
| Shredder Shed-Southern Facade | Area | Leq,adj,9h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 499.84 | -65.0 | -4.7 | -1.9 | -0.8 | 0.00 | 0.0 | 0.0 | 20.6 | -9.5 | 0.0 | 0.0 | 16.0 |
| Shredder Shed-Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.44 | -65.0 | -4.8 | -1.8 | -0.8 | 0.00 | 0.0 | 0.0 | 21.6 | 0.0 | 0.0 | 0.0 | 26.6 |
| Shredder Shed-Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.44 | -65.0 | -4.8 | -1.8 | -0.8 | 0.00 | 0.0 | 0.0 | 21.6 | | | | |
| Shredder Shed-Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.44 | -65.0 | -4.8 | -1.8 | -0.8 | 0.00 | 0.0 | 0.0 | 21.6 | 0.0 | 0.0 | 0.0 | 26.6 |
| Shredder Shed-Western Facade | Area | Leq,adj,11 | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.44 | -65.0 | -4.8 | -1.8 | -0.8 | 0.00 | 0.0 | 0.0 | 21.6 | -1.4 | 0.0 | 0.0 | 25.2 |
| Shredder Shed-Western Facade | Area | Leq,adj,4h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.44 | -65.0 | -4.8 | -1.8 | -0.8 | 0.00 | 0.0 | 0.0 | 21.6 | | 0.0 | | |
| Shredder Shed-Western Facade | Area | Leq,adj,9h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 502.44 | -65.0 | -4.8 | -1.8 | -0.8 | 0.00 | 0.0 | 0.0 | 21.6 | -9.5 | 0.0 | 0.0 | 17.1 |
| Truck Movements | Line | Leq,adj,1h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 599.75 | -66.6 | -2.1 | -2.6 | -3.2 | 0.00 | 0.0 | 0.0 | 11.1 | 7.8 | 0.0 | 0.0 | 18.9 |
| Truck Movements | Line | Leq,adj,1h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 599.75 | -66.6 | -2.1 | -2.6 | -3.2 | 0.00 | 0.0 | 0.0 | 11.1 | | | | |
| Truck Movements | Line | Leq,adj,1h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 599.75 | -66.6 | -2.1 | -2.6 | -3.2 | 0.00 | 0.0 | 0.0 | 11.1 | 7.8 | 0.0 | 0.0 | 18.9 |
| Truck Movements | Line | Leq,adj,11 | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 599.75 | -66.6 | -2.1 | -2.6 | -3.2 | 0.00 | 0.0 | 0.0 | 11.1 | 6.7 | 0.0 | 0.0 | 17.8 |
| Truck Movements | Line | Leq,adj,4h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 599.75 | -66.6 | -2.1 | -2.6 | -3.2 | 0.00 | 0.0 | 0.0 | 11.1 | | 0.0 | | |
| Truck Movements | Line | Leq,adj,9h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 599.75 | -66.6 | -2.1 | -2.6 | -3.2 | 0.00 | 0.0 | 0.0 | 11.1 | -1.8 | 0.0 | 0.0 | 9.3 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Existing Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dB(A) | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Receiver: 186 Boonenne Road Floor: GF Dir: S Leq,ajd,1h,Day: 42 dB(A) Leq,adj,1h,Evening: dB(A) Leq,adj,1h,Night: 35 dB(A) Leq,adj,11h,Day: 38 dB(A) Leq,adj,4h,Evening: dB(A) Leq,adj,9h,Night: 26 dB(A) | | | | | | | | | | | | | | | | | | | | | | | |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 454.58 | -64.1 | -2.0 | -3.1 | -1.8 | 0.00 | 0.0 | 0.0 | 12.1 | 0.0 | 0.0 | 0.0 | 12.1 |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 454.58 | -64.1 | -2.0 | -3.1 | -1.8 | 0.00 | 0.0 | 0.0 | 12.1 | | | | |
| Carpark | PLot | Leq,adj,1h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 454.58 | -64.1 | -2.0 | -3.1 | -1.8 | 0.00 | 0.0 | 0.0 | 12.1 | 0.8 | 0.0 | 0.0 | 12.9 |
| Carpark | PLot | Leq,adj,11 | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 454.58 | -64.1 | -2.0 | -3.1 | -1.8 | 0.00 | 0.0 | 0.0 | 12.1 | -0.6 | 0.0 | 0.0 | 11.5 |
| Carpark | PLot | Leq,adj,4h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 454.58 | -64.1 | -2.0 | -3.1 | -1.8 | 0.00 | 0.0 | 0.0 | 12.1 | | 0.0 | | |
| Carpark | PLot | Leq,adj,9h | | | 61.0 | 83.2 | 167.8 | 0.0 | 0.0 | 0 | 454.58 | -64.1 | -2.0 | -3.1 | -1.8 | 0.00 | 0.0 | 0.0 | 12.1 | -8.8 | 0.0 | 0.0 | 3.4 |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 380.71 | -62.6 | -1.2 | -4.6 | -4.5 | 0.00 | 0.0 | 0.0 | 41.1 | -4.8 | 0.0 | 0.0 | 41.3 |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 380.71 | -62.6 | -1.2 | -4.6 | -4.5 | 0.00 | 0.0 | 0.0 | 41.1 | | | | |
| Chainsaw | Point | Leq,adj,1h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 380.71 | -62.6 | -1.2 | -4.6 | -4.5 | 0.00 | 0.0 | 0.0 | 41.1 | | 0.0 | | |
| Chainsaw | Point | Leq,adj,11 | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 380.71 | -62.6 | -1.2 | -4.6 | -4.5 | 0.00 | 0.0 | 0.0 | 41.1 | -10.4 | 0.0 | 0.0 | 35.7 |
| Chainsaw | Point | Leq,adj,4h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 380.71 | -62.6 | -1.2 | -4.6 | -4.5 | 0.00 | 0.0 | 0.0 | 41.1 | | 0.0 | | |
| Chainsaw | Point | Leq,adj,9h | | | 114.0 | 114.0 | | 0.0 | 5.0 | 0 | 380.71 | -62.6 | -1.2 | -4.6 | -4.5 | 0.00 | 0.0 | 0.0 | 41.1 | | 0.0 | | |
| Circular Saw 1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 488.50 | -64.8 | -0.6 | -4.7 | -4.0 | 0.00 | 0.0 | 0.0 | 25.3 | -10.0 | 0.0 | 0.0 | 20.3 |
| Circular Saw 1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 488.50 | -64.8 | -0.6 | -4.7 | -4.0 | 0.00 | 0.0 | 0.0 | 25.3 | | | | |
| Circular Saw 1 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 488.50 | -64.8 | -0.6 | -4.7 | -4.0 | 0.00 | 0.0 | 0.0 | 25.3 | -10.0 | 0.0 | 0.0 | 20.3 |
| Circular Saw 1 | Point | Leq,adj,11 | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 488.50 | -64.8 | -0.6 | -4.7 | -4.0 | 0.00 | 0.0 | 0.0 | 25.3 | -11.4 | 0.0 | 0.0 | 18.9 |
| Circular Saw 1 | Point | Leq,adj,4h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 488.50 | -64.8 | -0.6 | -4.7 | -4.0 | 0.00 | 0.0 | 0.0 | 25.3 | | 0.0 | | |
| Circular Saw 1 | Point | Leq,adj,9h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 488.50 | -64.8 | -0.6 | -4.7 | -4.0 | 0.00 | 0.0 | 0.0 | 25.3 | -19.5 | 0.0 | 0.0 | 10.8 |
| Circular Saw 2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 499.82 | -65.0 | -0.6 | -5.3 | -3.8 | 0.00 | 0.0 | 0.0 | 24.7 | -10.0 | 0.0 | 0.0 | 19.7 |
| Circular Saw 2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 499.82 | -65.0 | -0.6 | -5.3 | -3.8 | 0.00 | 0.0 | 0.0 | 24.7 | | | | |
| Circular Saw 2 | Point | Leq,adj,1h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 499.82 | -65.0 | -0.6 | -5.3 | -3.8 | 0.00 | 0.0 | 0.0 | 24.7 | -10.0 | 0.0 | 0.0 | 19.7 |
| Circular Saw 2 | Point | Leq,adj,11 | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 499.82 | -65.0 | -0.6 | -5.3 | -3.8 | 0.00 | 0.0 | 0.0 | 24.7 | -11.4 | 0.0 | 0.0 | 18.3 |
| Circular Saw 2 | Point | Leq,adj,4h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 499.82 | -65.0 | -0.6 | -5.3 | -3.8 | 0.00 | 0.0 | 0.0 | 24.7 | | 0.0 | | |
| Circular Saw 2 | Point | Leq,adj,9h | | | 99.4 | 99.4 | | 0.0 | 5.0 | 0 | 499.82 | -65.0 | -0.6 | -5.3 | -3.8 | 0.00 | 0.0 | 0.0 | 24.7 | -19.5 | 0.0 | 0.0 | 10.2 |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 492.12 | -64.8 | -0.1 | -4.6 | -2.1 | 0.00 | 0.0 | 0.1 | 16.7 | 0.0 | 0.0 | 0.0 | 16.7 |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 492.12 | -64.8 | -0.1 | -4.6 | -2.1 | 0.00 | 0.0 | 0.1 | 16.7 | | | | |
| Conveyor Belt | Area | Leq,adj,1h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 492.12 | -64.8 | -0.1 | -4.6 | -2.1 | 0.00 | 0.0 | 0.1 | 16.7 | 0.0 | 0.0 | 0.0 | 16.7 |
| Conveyor Belt | Area | Leq,adj,11 | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 492.12 | -64.8 | -0.1 | -4.6 | -2.1 | 0.00 | 0.0 | 0.1 | 16.7 | -1.4 | 0.0 | 0.0 | 15.4 |
| Conveyor Belt | Area | Leq,adj,4h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 492.12 | -64.8 | -0.1 | -4.6 | -2.1 | 0.00 | 0.0 | 0.1 | 16.7 | | 0.0 | | |
| Conveyor Belt | Area | Leq,adj,9h | | | 61.5 | 88.3 | 473.4 | 0.0 | 0.0 | 0 | 492.12 | -64.8 | -0.1 | -4.6 | -2.1 | 0.00 | 0.0 | 0.1 | 16.7 | -9.5 | 0.0 | 0.0 | 7.2 |
| Flexi North-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 484.84 | -64.7 | -4.8 | -2.4 | -0.7 | 0.00 | 0.0 | 0.0 | 13.1 | 0.0 | 0.0 | 0.0 | 18.1 |

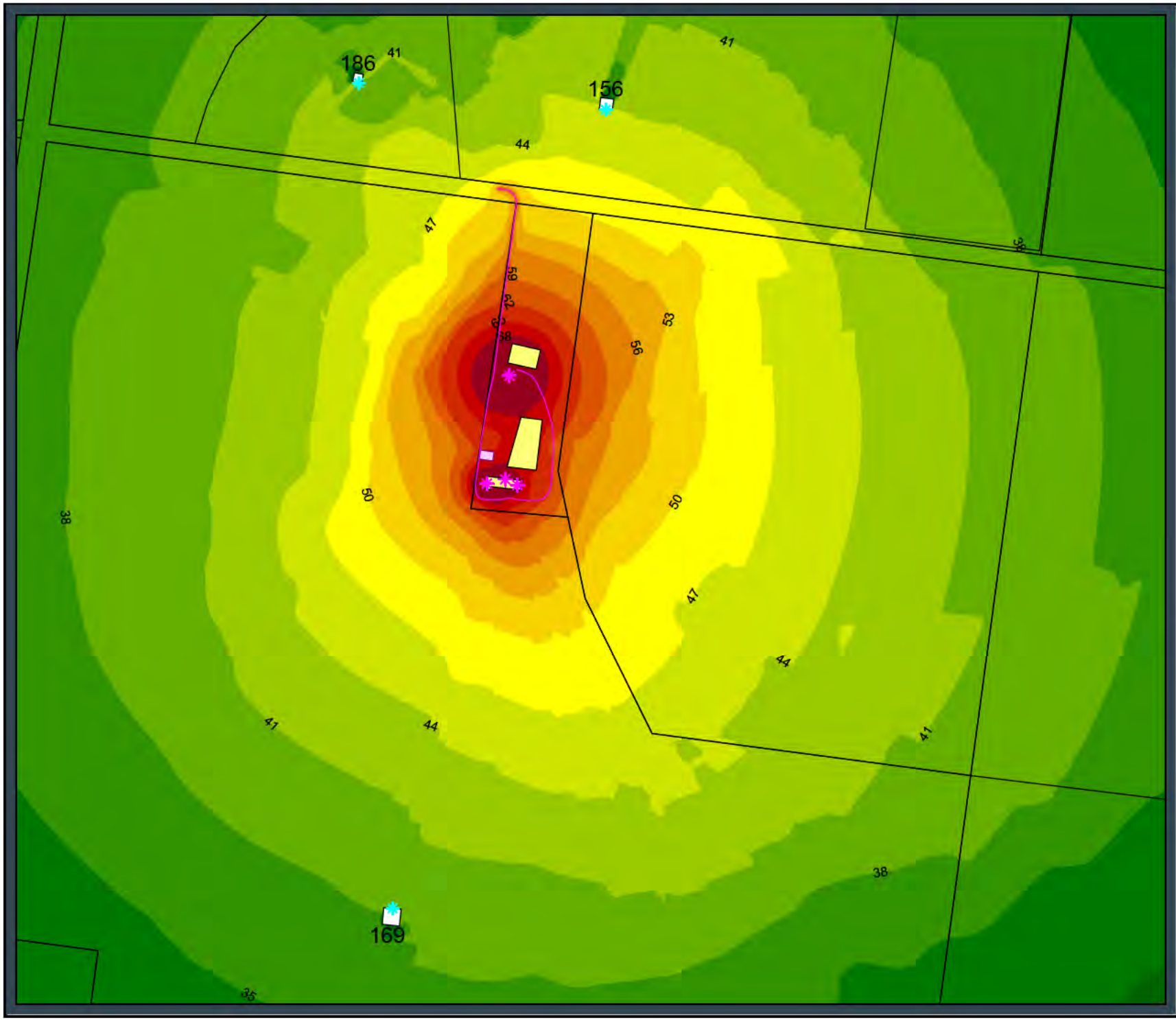
# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Existing Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dB(A) | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Flexi North-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 484.84 | -64.7 | -4.8 | -2.4 | -0.7 | 0.00 | 0.0 | 0.0 | 13.1 | | | | |
| Flexi North-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 484.84 | -64.7 | -4.8 | -2.4 | -0.7 | 0.00 | 0.0 | 0.0 | 13.1 | 0.0 | 0.0 | 0.0 | 18.1 |
| Flexi North-Noise Breakout | Area | Leq,adj,11 | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 484.84 | -64.7 | -4.8 | -2.4 | -0.7 | 0.00 | 0.0 | 0.0 | 13.1 | -1.4 | 0.0 | 0.0 | 16.7 |
| Flexi North-Noise Breakout | Area | Leq,adj,4h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 484.84 | -64.7 | -4.8 | -2.4 | -0.7 | 0.00 | 0.0 | 0.0 | 13.1 | | 0.0 | | |
| Flexi North-Noise Breakout | Area | Leq,adj,9h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 484.84 | -64.7 | -4.8 | -2.4 | -0.7 | 0.00 | 0.0 | 0.0 | 13.1 | -9.5 | 0.0 | 0.0 | 8.6 |
| Flexi South-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 488.09 | -64.8 | -4.8 | -9.4 | -0.3 | 0.00 | 0.0 | 0.0 | 6.5 | 0.0 | 0.0 | 0.0 | 11.5 |
| Flexi South-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 488.09 | -64.8 | -4.8 | -9.4 | -0.3 | 0.00 | 0.0 | 0.0 | 6.5 | | | | |
| Flexi South-Noise Breakout | Area | Leq,adj,1h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 488.09 | -64.8 | -4.8 | -9.4 | -0.3 | 0.00 | 0.0 | 0.0 | 6.5 | 0.0 | 0.0 | 0.0 | 11.5 |
| Flexi South-Noise Breakout | Area | Leq,adj,11 | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 488.09 | -64.8 | -4.8 | -9.4 | -0.3 | 0.00 | 0.0 | 0.0 | 6.5 | -1.4 | 0.0 | 0.0 | 10.1 |
| Flexi South-Noise Breakout | Area | Leq,adj,4h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 488.09 | -64.8 | -4.8 | -9.4 | -0.3 | 0.00 | 0.0 | 0.0 | 6.5 | | 0.0 | | |
| Flexi South-Noise Breakout | Area | Leq,adj,9h | | | 76.0 | 82.7 | 4.7 | 0.0 | 5.0 | 3 | 488.09 | -64.8 | -4.8 | -9.4 | -0.3 | 0.00 | 0.0 | 0.0 | 6.5 | -9.5 | 0.0 | 0.0 | 1.9 |
| Forklift North | Area | Leq,adj,1h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 369.36 | -62.3 | -1.3 | -3.7 | -1.9 | 0.00 | 0.0 | 0.0 | 22.8 | 0.0 | 0.0 | 0.0 | 27.8 |
| Forklift North | Area | Leq,adj,1h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 369.36 | -62.3 | -1.3 | -3.7 | -1.9 | 0.00 | 0.0 | 0.0 | 22.8 | | | | |
| Forklift North | Area | Leq,adj,1h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 369.36 | -62.3 | -1.3 | -3.7 | -1.9 | 0.00 | 0.0 | 0.0 | 22.8 | 0.0 | 0.0 | 0.0 | 27.8 |
| Forklift North | Area | Leq,adj,11 | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 369.36 | -62.3 | -1.3 | -3.7 | -1.9 | 0.00 | 0.0 | 0.0 | 22.8 | -1.4 | 0.0 | 0.0 | 26.4 |
| Forklift North | Area | Leq,adj,4h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 369.36 | -62.3 | -1.3 | -3.7 | -1.9 | 0.00 | 0.0 | 0.0 | 22.8 | | 0.0 | | |
| Forklift North | Area | Leq,adj,9h | | | 63.1 | 92.0 | 768.8 | 0.0 | 5.0 | 0 | 369.36 | -62.3 | -1.3 | -3.7 | -1.9 | 0.00 | 0.0 | 0.0 | 22.8 | -9.5 | 0.0 | 0.0 | 18.2 |
| Forklift South | Area | Leq,adj,1h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 460.61 | -64.3 | -2.0 | -3.7 | -2.3 | 0.00 | 0.0 | 0.0 | 19.7 | 0.0 | 0.0 | 0.0 | 24.7 |
| Forklift South | Area | Leq,adj,1h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 460.61 | -64.3 | -2.0 | -3.7 | -2.3 | 0.00 | 0.0 | 0.0 | 19.7 | | | | |
| Forklift South | Area | Leq,adj,1h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 460.61 | -64.3 | -2.0 | -3.7 | -2.3 | 0.00 | 0.0 | 0.0 | 19.7 | 0.0 | 0.0 | 0.0 | 24.7 |
| Forklift South | Area | Leq,adj,11 | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 460.61 | -64.3 | -2.0 | -3.7 | -2.3 | 0.00 | 0.0 | 0.0 | 19.7 | -1.4 | 0.0 | 0.0 | 23.3 |
| Forklift South | Area | Leq,adj,4h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 460.61 | -64.3 | -2.0 | -3.7 | -2.3 | 0.00 | 0.0 | 0.0 | 19.7 | | 0.0 | | |
| Forklift South | Area | Leq,adj,9h | | | 59.6 | 92.0 | 1725.9 | 0.0 | 5.0 | 0 | 460.61 | -64.3 | -2.0 | -3.7 | -2.3 | 0.00 | 0.0 | 0.0 | 19.7 | -9.5 | 0.0 | 0.0 | 15.1 |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 486.43 | -64.7 | -1.0 | -20.0 | -1.8 | 0.00 | 0.0 | 0.0 | 12.8 | 0.0 | 0.0 | 0.0 | 17.8 |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 486.43 | -64.7 | -1.0 | -20.0 | -1.8 | 0.00 | 0.0 | 0.0 | 12.8 | | | | |
| Shredder Breakout | Point | Leq,adj,1h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 486.43 | -64.7 | -1.0 | -20.0 | -1.8 | 0.00 | 0.0 | 0.0 | 12.8 | 0.0 | 0.0 | 0.0 | 17.8 |
| Shredder Breakout | Point | Leq,adj,11 | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 486.43 | -64.7 | -1.0 | -20.0 | -1.8 | 0.00 | 0.0 | 0.0 | 12.8 | -1.4 | 0.0 | 0.0 | 16.4 |
| Shredder Breakout | Point | Leq,adj,4h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 486.43 | -64.7 | -1.0 | -20.0 | -1.8 | 0.00 | 0.0 | 0.0 | 12.8 | | 0.0 | | |
| Shredder Breakout | Point | Leq,adj,9h | | | 100.2 | 100.2 | | 0.0 | 5.0 | 0 | 486.43 | -64.7 | -1.0 | -20.0 | -1.8 | 0.00 | 0.0 | 0.0 | 12.8 | -9.5 | 0.0 | 0.0 | 8.2 |
| Shredder Shed-Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 486.10 | -64.7 | -4.2 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 15.6 | 0.0 | 0.0 | 0.0 | 20.6 |
| Shredder Shed-Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 486.10 | -64.7 | -4.2 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 15.6 | | | | |
| Shredder Shed-Eastern Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 486.10 | -64.7 | -4.2 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 15.6 | 0.0 | 0.0 | 0.0 | 20.6 |
| Shredder Shed-Eastern Facade | Area | Leq,adj,11 | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 486.10 | -64.7 | -4.2 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 15.6 | -1.4 | 0.0 | 0.0 | 19.2 |

# Boonenne Timbers
## ISO9613 Calculation Method
## Predicted Operational Noise Levels at Adjacent Uses
## From Activities at Existing Development

| Source | Source type | time slice | Li | R'w | L'w | Lw | l or A | KI | KT | Ko | S | Adiv | Agr | Abar | Aatm | Amisc | ADI | dLrefl | Ls | dLw | Cmet | ZR | Lr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dB(A) | dB | dB(A) | dB(A) | m,m² | dB | dB | dB | m | dB | dB | dB | dB | dB | dB | dB(A) | dB(A) | dB | dB | dB | dB(A) |
| Shredder Shed-Eastern Facade | Area | Leq,adj,4h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 486.10 | -64.7 | -4.2 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 15.6 | | 0.0 | | |
| Shredder Shed-Eastern Facade | Area | Leq,adj,9h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 486.10 | -64.7 | -4.2 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 15.6 | -9.5 | 0.0 | 0.0 | 11.0 |
| Shredder Shed-Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 482.59 | -64.7 | -4.3 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.4 | 0.0 | 0.0 | 0.0 | 26.4 |
| Shredder Shed-Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 482.59 | -64.7 | -4.3 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.4 | | | | |
| Shredder Shed-Northern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 482.59 | -64.7 | -4.3 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.4 | 0.0 | 0.0 | 0.0 | 26.4 |
| Shredder Shed-Northern Facade | Area | Leq,adj,11 | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 482.59 | -64.7 | -4.3 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.4 | -1.4 | 0.0 | 0.0 | 25.0 |
| Shredder Shed-Northern Facade | Area | Leq,adj,4h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 482.59 | -64.7 | -4.3 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.4 | | 0.0 | | |
| Shredder Shed-Northern Facade | Area | Leq,adj,9h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 482.59 | -64.7 | -4.3 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 21.4 | -9.5 | 0.0 | 0.0 | 16.8 |
| Shredder Shed-Roof | Area | Leq,adj,1h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 485.28 | -64.7 | -3.4 | -2.0 | -0.7 | 0.00 | 0.0 | 0.0 | 21.9 | 0.0 | 0.0 | 0.0 | 26.9 |
| Shredder Shed-Roof | Area | Leq,adj,1h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 485.28 | -64.7 | -3.4 | -2.0 | -0.7 | 0.00 | 0.0 | 0.0 | 21.9 | | | | |
| Shredder Shed-Roof | Area | Leq,adj,1h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 485.28 | -64.7 | -3.4 | -2.0 | -0.7 | 0.00 | 0.0 | 0.0 | 21.9 | 0.0 | 0.0 | 0.0 | 26.9 |
| Shredder Shed-Roof | Area | Leq,adj,11 | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 485.28 | -64.7 | -3.4 | -2.0 | -0.7 | 0.00 | 0.0 | 0.0 | 21.9 | -1.4 | 0.0 | 0.0 | 25.5 |
| Shredder Shed-Roof | Area | Leq,adj,4h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 485.28 | -64.7 | -3.4 | -2.0 | -0.7 | 0.00 | 0.0 | 0.0 | 21.9 | | 0.0 | | |
| Shredder Shed-Roof | Area | Leq,adj,9h | | | 78.7 | 92.7 | 24.7 | 0.0 | 5.0 | 0 | 485.28 | -64.7 | -3.4 | -2.0 | -0.7 | 0.00 | 0.0 | 0.0 | 21.9 | -9.5 | 0.0 | 0.0 | 17.3 |
| Shredder Shed-Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 487.85 | -64.8 | -4.3 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 14.3 | 0.0 | 0.0 | 0.0 | 19.3 |
| Shredder Shed-Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 487.85 | -64.8 | -4.3 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 14.3 | | | | |
| Shredder Shed-Southern Facade | Area | Leq,adj,1h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 487.85 | -64.8 | -4.3 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 14.3 | 0.0 | 0.0 | 0.0 | 19.3 |
| Shredder Shed-Southern Facade | Area | Leq,adj,11 | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 487.85 | -64.8 | -4.3 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 14.3 | -1.4 | 0.0 | 0.0 | 17.9 |
| Shredder Shed-Southern Facade | Area | Leq,adj,4h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 487.85 | -64.8 | -4.3 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 14.3 | | 0.0 | | |
| Shredder Shed-Southern Facade | Area | Leq,adj,9h | | | 78.7 | 89.9 | 13.1 | 0.0 | 5.0 | 3 | 487.85 | -64.8 | -4.3 | -9.2 | -0.3 | 0.00 | 0.0 | 0.0 | 14.3 | -9.5 | 0.0 | 0.0 | 9.7 |
| Shredder Shed-Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 484.33 | -64.7 | -4.4 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 22.4 | 0.0 | 0.0 | 0.0 | 27.4 |
| Shredder Shed-Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 484.33 | -64.7 | -4.4 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 22.4 | | | | |
| Shredder Shed-Western Facade | Area | Leq,adj,1h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 484.33 | -64.7 | -4.4 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 22.4 | 0.0 | 0.0 | 0.0 | 27.4 |
| Shredder Shed-Western Facade | Area | Leq,adj,11 | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 484.33 | -64.7 | -4.4 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 22.4 | -1.4 | 0.0 | 0.0 | 26.0 |
| Shredder Shed-Western Facade | Area | Leq,adj,4h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 484.33 | -64.7 | -4.4 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 22.4 | | 0.0 | | |
| Shredder Shed-Western Facade | Area | Leq,adj,9h | | | 78.7 | 91.0 | 17.0 | 0.0 | 5.0 | 3 | 484.33 | -64.7 | -4.4 | -1.8 | -0.7 | 0.00 | 0.0 | 0.0 | 22.4 | -9.5 | 0.0 | 0.0 | 17.9 |
| Truck Movements | Line | Leq,adj,1h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 350.07 | -61.9 | -2.0 | -2.5 | -1.7 | 0.00 | 0.0 | 0.0 | 17.6 | 7.8 | 0.0 | 0.0 | 25.4 |
| Truck Movements | Line | Leq,adj,1h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 350.07 | -61.9 | -2.0 | -2.5 | -1.7 | 0.00 | 0.0 | 0.0 | 17.6 | | | | |
| Truck Movements | Line | Leq,adj,1h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 350.07 | -61.9 | -2.0 | -2.5 | -1.7 | 0.00 | 0.0 | 0.0 | 17.6 | 7.8 | 0.0 | 0.0 | 25.4 |
| Truck Movements | Line | Leq,adj,11 | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 350.07 | -61.9 | -2.0 | -2.5 | -1.7 | 0.00 | 0.0 | 0.0 | 17.6 | 6.7 | 0.0 | 0.0 | 24.3 |
| Truck Movements | Line | Leq,adj,4h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 350.07 | -61.9 | -2.0 | -2.5 | -1.7 | 0.00 | 0.0 | 0.0 | 17.6 | | 0.0 | | |
| Truck Movements | Line | Leq,adj,9h | | | 57.7 | 85.6 | 622.9 | 0.0 | 0.0 | 0 | 350.07 | -61.9 | -2.0 | -2.5 | -1.7 | 0.00 | 0.0 | 0.0 | 17.6 | -1.8 | 0.0 | 0.0 | 15.8 |

# Appendix F – Noise Contour Maps




ATP250121

**Boonenne Timbers**

**Noise Levels Associated with Existing Development**

**Ground Floor (1.8m AGL)**

Operational Noise Level
$L_{eq,adj,1hr,\ Day}$ dB(A)

| | |
|---|---|
| | <= 29 |
| 29 < | <= 32 |
| 32 < | <= 35 |
| 35 < | <= 38 |
| 38 < | <= 41 |
| 41 < | <= 44 |
| 44 < | <= 47 |
| 47 < | <= 50 |
| 50 < | <= 53 |
| 53 < | <= 56 |
| 56 < | <= 59 |
| 59 < | <= 62 |
| 62 < | <= 65 |
| 65 < | <= 68 |
| 68 < | |

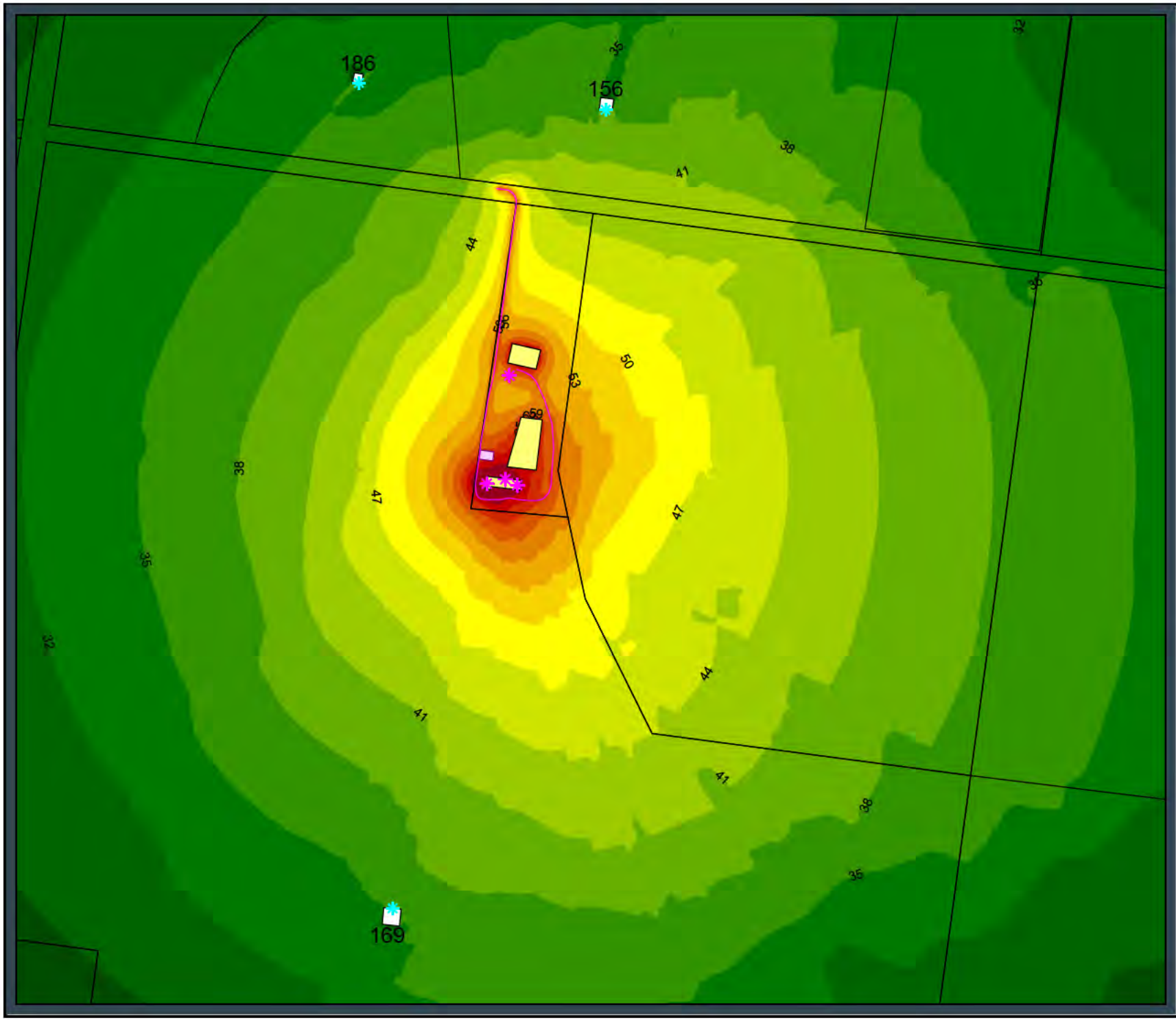
**Legend**

- Adjacent building
- Point receiver
- Noise source (point)
- Noise source (line)
- Noise source (area)
- Noise source (parking lot)
- Noise source (industrial building)
- Lot boundary

**SCALE @ A4 1:6000**

0 25 50 100 150 200 250 m

Grid Spacing: 2m
Project Engineer: Felix Gau Rinaldi
Created: 16/01/2025
Processed with SoundPLAN 9.1




ATP250121

**Boonenne Timbers**

**Noise Levels Associated with Existing Development**

**Ground Floor (1.8m AGL)**

Operational Noise Level
$L_{eq,adj,1hr,\ Night}$ dB(A)

| | |
|---|---|
| | <= 29 |
| 29 < | <= 32 |
| 32 < | <= 35 |
| 35 < | <= 38 |
| 38 < | <= 41 |
| 41 < | <= 44 |
| 44 < | <= 47 |
| 47 < | <= 50 |
| 50 < | <= 53 |
| 53 < | <= 56 |
| 56 < | <= 59 |
| 59 < | <= 62 |
| 62 < | <= 65 |
| 65 < | <= 68 |
| 68 < | |

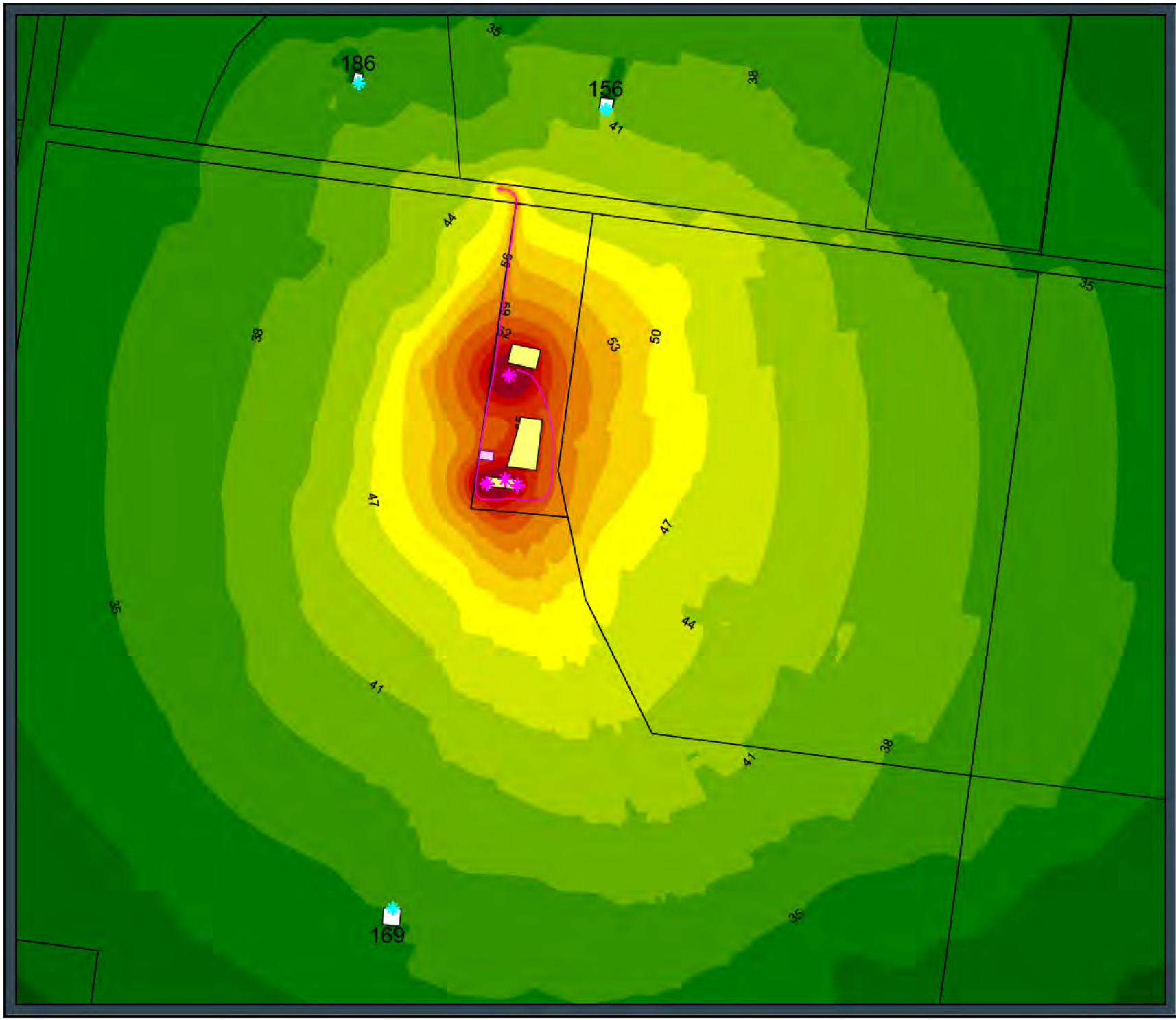
**Legend**

- Adjacent building
- Point receiver
- Noise source (point)
- Noise source (line)
- Noise source (area)
- Noise source (parking lot)
- Noise source (industrial building)
- Lot boundary

**SCALE @ A4 1:6000**

0 25 50 100 150 200 250 m

Grid Spacing: 2m
Project Engineer: Felix Gau Rinaldi
Created: 16/01/2025
Processed with SoundPLAN 9.1




ATP250121

**Boonenne Timbers**

**Noise Levels Associated with Existing Development**

**Ground Floor (1.8m AGL)**

Operational Noise Level
$L_{eq,adj,11hr,\ Day}$ dB(A)

| | |
|---|---|
| | <= 29 |
| 29 < | <= 32 |
| 32 < | <= 35 |
| 35 < | <= 38 |
| 38 < | <= 41 |
| 41 < | <= 44 |
| 44 < | <= 47 |
| 47 < | <= 50 |
| 50 < | <= 53 |
| 53 < | <= 56 |
| 56 < | <= 59 |
| 59 < | <= 62 |
| 62 < | <= 65 |
| 65 < | <= 68 |
| 68 < | |

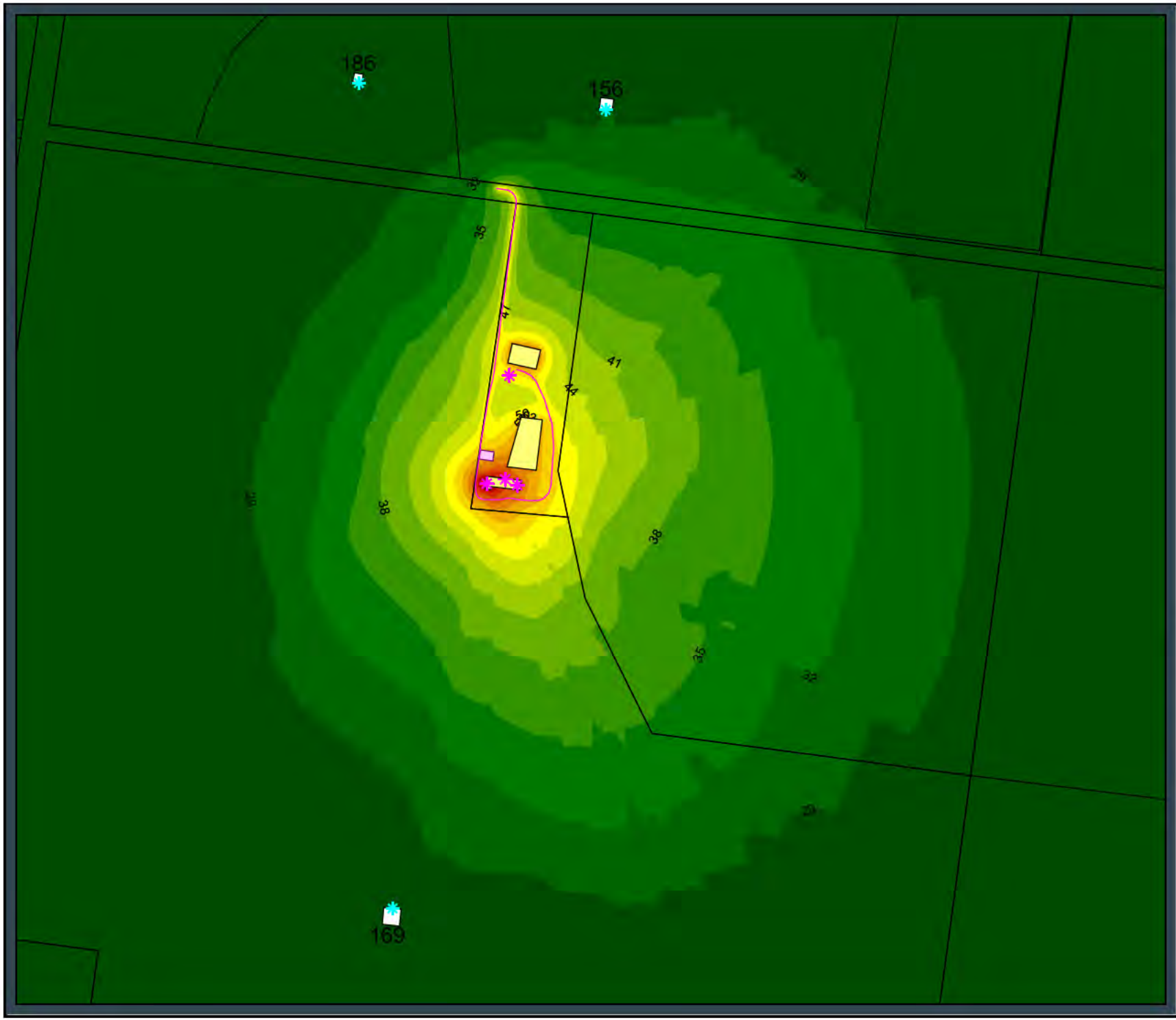
**Legend**

- Adjacent building
- Point receiver
- Noise source (point)
- Noise source (line)
- Noise source (area)
- Noise source (parking lot)
- Noise source (industrial building)
- Lot boundary

**SCALE @ A4 1:6000**

0 25 50 100 150 200 250 m

Grid Spacing: 2m
Project Engineer: Felix Gau Rinaldi
Created: 16/01/2025
Processed with SoundPLAN 9.1




ATP250121

**Boonenne Timbers**

**Noise Levels Associated with Existing Development**

**Ground Floor (1.8m AGL)**

Operational Noise Level
$L_{eq,adj,9hr,\ Night}$ dB(A)

| | |
|---|---|
| | <= 29 |
| 29 < | <= 32 |
| 32 < | <= 35 |
| 35 < | <= 38 |
| 38 < | <= 41 |
| 41 < | <= 44 |
| 44 < | <= 47 |
| 47 < | <= 50 |
| 50 < | <= 53 |
| 53 < | <= 56 |
| 56 < | <= 59 |
| 59 < | <= 62 |
| 62 < | <= 65 |
| 65 < | <= 68 |
| 68 < | |

**Legend**

- Adjacent building
- Point receiver
- Noise source (point)
- Noise source (line)
- Noise source (area)
- Noise source (parking lot)
- Noise source (industrial building)
- Lot boundary

**SCALE @ A4 1:6000**

0 25 50 100 150 200 250 m

Grid Spacing: 2m
Project Engineer: Felix Gau Rinaldi
Created: 16/01/2025
Processed with SoundPLAN 9.1

# Appendix G – Acoustic Screening (Curtains)

# Flexshield
# SONICCLEAR INDUSTRIAL PVC - STRIP CURTAINS

**Durable, reliable, and efficient barrier solutions**

SonicClear PVC strip curtains are transparent curtains that are ideal for maintaining an ambient temperature for your warehouse. They also keep out dust/flies/pests, restrict the movement of air pollutants, and control noise.

Thanks to their clever design, SonicClear PVC strip curtains efficiently keep the temperature in your production area relatively stable by allowing smaller airflow.

## Why use PVC strip curtains and doors?

**They are durable**

The versatile and durable SonicClear PVC strip curtains can withstand massive amounts of force and scrapes, and won't break easily.

**They adhere to safety standards**

SonicClear PVC Strip curtains help reduce workplace accidents by allowing employees to check pathways for potential hazards before entering.

**They are more efficient**

Staff can pass through the screens without needing to open them up completely. Even small vehicles such as forklifts won't have difficulty getting through the curtains.

**They can keep pests out**

Investing in SonicClear PVC curtains helps you prevent pest and insect infestations. The curtains are heavy enough to keep pests from entering, while still being lightweight for humans to pass through.

SonicClear Industrial PVC strip curtains for grinding bays.

SonicClear Industrial PVC strip curtains.

flex SHIELD
Health, Safety, Productivity.

Manufacturing | Construction | Resources
Utilities | Education | Defence

## SonicClear strip curtain doors

These PVC strip curtain doors allow rapid access into and out of doorways without the need to open and close a swinging door.

## SonicClear strip curtain walls

Strip curtain walls divide work processes and, depending on your application, can stretch for a very long distance.

Your SonicClear PVC strip curtains are custom-made to suit your exact size and specifications. Flexshield can supply the easy-to-install curtains in kit form with step-by-step instructions, or we will gladly install them onsite. Once installed they provide immediate results.

Flexshield also manufacture a complete SonicClear support system that will cover all your fixing and support requirements.

## NATA tested for sound insulation

SonicClear is available in 2 mm, 4 mm and 6 mm thick options, all of which are NATA tested.

Testing is per Australian Standard 1191-2002, Acoustics: Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.

The weighted sound transmission index (Rw) is determined as specified in AS/NZS ISO 717.1-2004 Acoustics – Rating of sound insulation in buildings and building elements, Part I: Airborne Sound Insulation.

Ask us for your copy of the full NATA Attenuation test results.

## What is NATA testing?

NATA – the National Association of Testing Authorities – accredits organisations to perform testing and inspection activities for their products and services. This accreditation gives you the assurance you need to make safe, healthy and reliable choices.

SonicClear Industrial PVC strip curtains.

SonicClear Industrial PVC strip curtains for weather protection.

### Wonderful product and great service

"This is just a message to congratulate Flexshield on its wonderful product and great service. You were prompt in the manufacture and delivered when you said you would. We wouldn't hesitate to use this wash bay curtain in the future, and we would be using Flexshield to supply us."

Scott Freitag
Site Supervisor | Premier Building & Construction Pty Ltd

flex SHIELD
Health, Safety, Productivity.

# RESISTANCE OF FLEXSHIELD SONICCLEAR CURTAINS TO CHEMICALS

**Key - Chemical effect ratings**

- No effect - Excellent
- Moderate effect - Fair
- Minor effect - Good
- Severe effect - Poor

**Key**

- ● Satisfactory to 72°F
- ●○ Satisfactory to 120°F

| | PVC |
|---|---|
| Hydrochloric Acid 37% | ● |
| Hydrochloric Acid 100% | ●○ |
| Hydrocyanic Acid | ● |
| Hydrocyanic Acid (Gas 10%) | |
| Hydrofluoric Acid 20% | |
| Hydrofluoric Acid 100% | |
| Hydrofluosilicic Acid 20% | ●○ |
| Hydrofluosilicic Acid 100% | ● |
| Hydrogen Gas | ●○ |
| Hydrogen Peroxide 50% | ● |
| Hydrogen Peroxide 100% | ●○ |
| Hydrogen Sulfide (aqua) | ● |
| Hydrogen Sulfide (dry) | ●○ |
| Hydroxyacetic Acid 70% | |
| Iodine | |
| Isopropyl Acetate | |
| Isopropyl Ether | |
| Jet Fuel ($JP_3$, -4, -5) | ● |
| Kerosene | ●○ |
| Ketones | |
| Lacquers | |
| Lacquer Thinners | |
| Lactic Acid | ● |
| Lard | ● |
| Lead Acetate | ●○ |
| Lead Sulfamate | ●○ |
| Lime | ● |
| Lubricants | ●○ |
| Magnesium Carbonate | ●○ |
| Magnesium Chloride | ●○ |
| Magnesium Hydroxide | ●○ |
| Magnesium Nitrate | ●○ |
| Magnesium Sulfate | ●○ |
| Maleic Acid | ●○ |
| Malic Acid | ●○ |
| Mercuric Chloride (Dilute) | ●○ |
| Mercuric Cyanide | ●○ |
| Murcury | |
| Methanol (Methyl Alcohol) | ● |
| Methyl Acetate | |
| Methyl Alcohol 10% | ● |
| Methyl Bromide | |
| Methyl Butyl Ketone | |
| Methyl Cellosolve | ●○ |
| Methyl Chloride | |
| Methyl Dichloride | |
| Methyl Ethyl Ketone | |
| Methyl Isobutyl Ketone | |
| Methylene Chloride | |
| Milk | ●○ |
| Molasses | ●○ |
| Naphtha | |
| Naphthalene | |
| Nickel Chloride | ●○ |
| Nickel Sulfate | ●○ |

| | PVC |
|---|---|
| Nitric Acid (5-10%) | ● |
| Nitric Acid (20%) | ● |
| Nitric Acid (50%) | ● |
| Nitric Acid (concentrated) | |
| Nitrobenzene | |
| Corn | |
| Cotton Seed | ●○ |
| Creosote | |
| Dieselo Fuel (20, 30, 40, 50) | ●○ |
| Fuel (1, 2, 3, 5A, 5B, 6) | ●○ |
| Linseed | ●○ |
| Mineral | ● |
| Olive | |
| Pine | |
| Rosin | |
| Silicone | |
| Soybean | ● |
| Turbine | ● |
| Oleic Acid | ●○ |
| Oleum 25% | |
| Oleum 100% | |
| Oxaalic Acid (cold) | ● |
| Paraffin | ● |
| Pentane | |
| Perchloroethylene | ● |
| Petrolatum | |
| Phenol (10%) | ● |
| Phenol (Carbolic Acid) | ● |
| Phosphoric Acid (<40%) | ●○ |
| Phosphoric Acid (>40%) | ●○ |
| Phosphoric Acid (Crude) | ●○ |
| Photographic Developer | |
| Picric Acid | |
| Potash | |
| Potassium Bicarbonate | |
| Potassium Bromide | |
| Potassium Carbonate | |
| Potassium Chlorate | |
| Potassium Chloride | |
| Potassium Chromate | |
| Potassium Cyanide Solutions | |
| Potassium Dichromate | |
| Potassium Ferrocyanide | |
| Potassium Hydroxide (caustic potash) | ● |
| Potassium Nitrate | |
| Potassium Permanganate | ● |
| Potassium Sulfate | ●○ |
| Potassium Sulfide | ●○ |
| Propane (liquified) | ● |
| Propylene Glycol | ● |
| Pyridine | |
| Pyrogallic Acid | |
| Rosins | ● |
| Sea Water | ●○ |
| Silicone | |

| | PVC |
|---|---|
| Silver Nitrate | ● |
| Soap Solutions | |
| Sodium Acetate | ● |
| Sodium Bicarbonate | ●○ |
| Sodium Bisulfate | ●○ |
| Sodium Bisulfite | ●○ |
| Sodium Borate | ●○ |
| Sodium Carbonate | ●○ |
| Sodium Chlorate | ● |
| Sodium Chloride | ●○ |
| Sodium Cyanide | ●○ |
| Sodium Fluoride | ●○ |
| Sodium Hydroxide (20%) | |
| Sodium Hydroxide (50%) | |
| Sodium Hydroxide (80%) | |
| Sodium Hypochlorite (20%) | |
| Sodium Hypochlorite (100%) | ●○ |
| Sodium Metaphosphate | ●○ |
| Sodium Metasilicate | |
| Sodium Nitrate | ●○ |
| Sodium Perborate | ●○ |
| Sodium Polyphosphate | ● |
| Sodium Silicate | ●○ |
| Sodium Sulfate | ●○ |
| Sodium Sulfide | ●○ |
| Sodium Tetraborate | ●○ |
| Sodium Thiosulfate (hypro) | ●○ |
| Stannic Chloride | ●○ |
| Stannous Chloride | ●○ |
| Sulfur Dioxide | ●○ |
| Sulfur Dioxide (Dry) | ●○ |
| Sulfur Trioxide (Dry) | ● |
| Sulfuric Acid (<10%) | ● |
| Sulfuric Acid (10-75%) | ● |
| Sulfurous Acid | ●○ |
| Tannic Acid | ● |
| Tanning Liquors | ● |
| Tartaric Acid | ● |
| Tomato Juice | |
| Urine | |
| Vinegar | ●○ |
| Water, Acid, Mine | ●○ |
| Water, Distilled | ●○ |
| Water, Fresh | ●○ |
| Water, Salt | ●○ |
| Whiskey and Wines | ●○ |
| White Liquor (Pulp Mill) | ●○ |
| Xylene | |
| Zinc Chloride | |
| Zinc Sulfate | ●○ |

*Does not include the track.

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

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# REPORT ON THE DETERMINATION OF AIRBORNE SOUND TRANSMISSION LOSS IN ONE-THIRD OCTAVE BANDS AND WEIGHTED SOUND REDUCTION INDEX ($R_w$) OF A 4mm SONICCLEAR STRIP CURTAIN WITH 120mm OVERLAPS.

| | |
|---|---|
| Testing Procedure: | AS 1191-2002 |
| Testing Laboratory: | Applied Acoustics Laboratory<br>RMIT University, Applied Physics Discipline<br>Melbourne, Victoria 3000, Australia<br>NATA Accreditation Number 1421 |
| Client: | Flexshield<br>40 Sowden Street<br>Drayton, Queensland<br>Australia 4350 |
| Date of Test: | 15/03/2006 |
| Date of Report: | 28/03/2006 |
| Report Number: | 121I/06-010/PD |
| Testing Officer: | Peter Dale |

[redacted]

Peter Dale
Approved NATA Signatory

NATA
WORLD RECOGNISED
ACCREDITATION

This laboratory is accredited by the National Association of Testing Authorities, Australia. The test reports herein have been performed in accordance with its terms of accreditation. This report may not be reproduced except in full.

# REPORT ON THE DETERMINATION OF AIRBORNE SOUND TRANSMISSION LOSS IN ONE-THIRD OCTAVE BANDS AND WEIGHTED SOUND REDUCTION INDEX ($R_w$) OF A 4mm SONICCLEAR STRIP CURTAIN WITH 120mm OVERLAPS.

## 1 INTRODUCTION

The test described in this report was carried out at the request of Flexshield. on the 15th of March 2006 to determine the airborne sound transmission loss and the weighted sound transmission index ($R_w$) of a 4mm SonicClear strip curtain with 400mm panels with 120mm overlaps.

The test has been carried out using the pair of sound transmission rooms of the Applied Physics Discipline, RMIT University. The sample under test is mounted in the vertical aperture between a reverberant source room and a reverberant receiving room.

The sound pressure level difference resulting between these two rooms when a sound source operates in the source room is used in conjunction with the surface area of the sample and the equivalent absorption area of the receiving room to determine the airborne sound transmission loss of the sample.

Testing has been carried out in accordance with Australian Standard 1191-2002, Acoustics: Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions. The weighted sound transmission index ($R_w$) has been determined as specified in AS/NZS ISO 717.1-2004 Acoustics – Rating of sound insulation in buildings and of building elements, Part I: Airborne Sound Insulation.

The measuring facilities and method have been accredited by the National Association of Testing Authorities, Australia (NATA) Accreditation No. 1421, and testing has been conducted fully in accordance with those terms of accreditation.

## 2. TEST FACILITIES

The sound transmission suite consists of a reverberant source room volume of 115.82 cubic metres and a reverberant receiving room of volume 114.73 cubic metres. Both rooms have an irregular geometry featuring a pentagonal floor plan with no two walls parallel, and with non-parallel floors and ceilings. The rooms are constructed of 305mm reinforced concrete, supported on laminated-rubber isolators, and acoustically de-coupled from one another by a 50mm closed cell polyurethane gasket.

The irregular room shape has been chosen to assist in the production of diffuse sound fields. Such diffuseness is further enhanced:

(a) In the receiving room by the inclusion of nine fixed non-rectangular panels, suspended in the room with random orientation. Six panels each have an area of 1.44 square metres and three each have an area of 1.67 square metres. The total one-sided area of these panel diffusers is 13.65 square metres, being 55.7% of that of the largest single boundary surface (the ceiling).

(b) In the source room by inclusion of nine fixed non-rectangular polyvinyl chloride panels suspended in the room with random orientation. Four panels each have an area 1.86 square metres, the other five each have an area 1.24 square metres. The total one-sided area of these panel diffusers is 13.64 square metres, being 56.5% of that of the largest single boundary surfaces (the ceiling).

The average sound absorption coefficient of the diffusers and the internal surfaces of the rooms is below 0.06 in each test frequency band.

## 3. EQUIPMENT

The equipment used in performing this test is listed below.

| | |
|---|---|
| Real Time Analyser | Bruel & Kjaer Type 2133 S/N 1570243 |
| Measuring Amplifier | Bruel & Kjaer Type 2610 S/N 1646952 |
| Microphone Rx Room | Bruel & Kjaer Type 4192 S/N 2114482 |
| Microphone Preamplifier RX Room | GRAS Type 26AK S/N 21137 |
| Microphone Power Supply RX Room | Bruel & Kjaer Type 2804 S/N 619032 |
| Microphone Tx Room | Bruel & Kjaer Type 4192 S/N 2114481 |
| Microphone Power Supply TX Room | Bruel & Kjaer Type 2804 S/N 684339 |
| Microphone Preamplifier TX Room | Bruel & Kjaer Type 2369 S/N 1748672 |
| Band-pass Filter Set | Rockland Wavetek Type 852 |
| Amplifier | Yamaha Type AX-500 S/N M53342910 |
| Speakers | Lorantz Audio |

## 4. PROCEDURES

Testing has been conducted in accordance with the methods of AS1191:2002 – Acoustics: Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.

Random noise is fed to a single loudspeaker placed in a corner of the source room. In each one-third octave band of centre frequency 100 to 5000Hz, the mean sound pressure level in each room is found by the use of a microphone connected to a Bruel & Kjaer 2133 real time analyser. Seven independent locations of the microphone are used in each room, with the signals temporally averaged for the sampling time of 128 seconds.

The equivalent absorption area of the receiving room is determined by measurement of the reverberation time in each one-third octave band, a loudspeaker is placed in one corner of the receiving room. Seven microphone positions are chosen, with eight decays obtained at each position, between 100 and 5000Hz. The microphone signal is relayed via a microphone amplifier, to a Bruel & Kjaer 2133 Real Time Analyser. The analyser is interfaced to a personal computer. A program running on the personal computer allows the determination of the reverberation time from the sound decays in accordance with AS1045:1988 - Acoustics: Measurements of Sound Absorption in a Room.

The measuring equipment has been calibrated by an external accredited calibration laboratory, and is in current calibration.

## 5 SAMPLE DESCRIPTION.

The test specimen was clear PVC curtain described as follows: 400 x 4 SonicClear panels with a 120mm overlap mounted on a 500 Series Acoustic Track.

The 500 series Acoustic Track was mounted horizontally on the upper vertical face of the test aperture on the receive room side. The curtain comprised of 400mm wide and 4mm thick panels. These panels were hung vertically from the 500 Series Acoustic Track. The panels were installed to provide a 120mm overlap with the previous panel. The panels drop was approximately 50mm longer than the aperture opening to allow sealing against the base of the aperture.

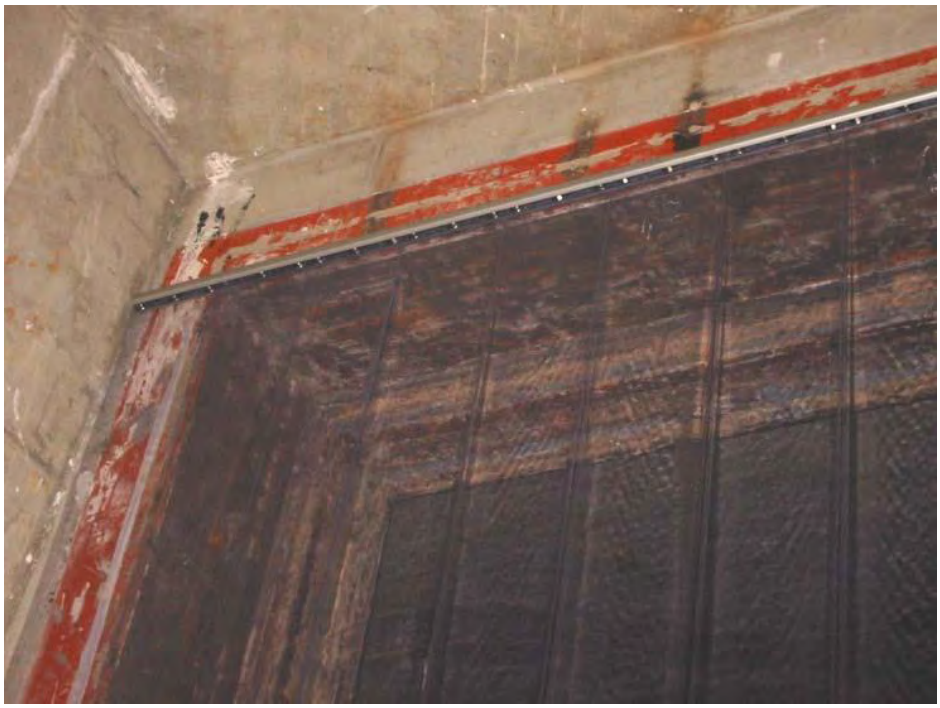
The nominal surface density of the 4mm SonicClear panels is 4.88

$kg/m^2$. Pictures 1 to 3 show curtain installation.

Picture 1: Curtain Sample mounted in test aperture.

Picture 2: View of Panel overlap.


Picture 3: Mounting of 500 Series Acoustic Track.



## 6. RESULTS

The measured airborne sound transmission loss, R dB, at each one-third octave bandwidth of centre frequencies between 100 – 5000 Hz is given in tubular form to the nearest decibel. The Weighted Sound Reduction Index ($R_w$) reference curve, in each one-third octave bandwidth of centre frequencies between 100 and 3150Hz are expressed in tabular form and are also represented graphically for the sample tested. There are no significant errors in transmission loss values due to flanking transmission, filler wall. The Weighted Sound Reduction Index of the sample is determined in accordance with AS/NZS ISO 717.1-2004.

The precision in the results is expressed as the 95% confidence interval in the determined sound transmission loss. The K value used to determine the 95% confidence interval is 2.5. This interval is estimated from the 95% confidence interval in each of the average source room level, the average receiving room level and the receiving room absorption/surface area of sample. These values are included in the table of results.

**6.1** Sample - Test Conditions

| | |
|---|---|
| Temperature: | Receive Room : $23.0^0$C.<br>Send Room : $23.0^0$C. |
| Humidity: | Receive Room : 53%.<br>Send Room : 53%. |
| Sample Surface Area: | 10.69 $m^2$ |
| Room Volumes: | Receive room : 115.74 $m^3$.<br>Source room : 121.61. $m^3$. |
| Date of test: | 15/03/2006 |

**6.2** Sound Transmission Loss Results and Weighted Sound Reduction Index $R_w$:

The Weighted Sound Reduction Index of the test curtain is: $R_w$ ($C;C_{tr}$) = 19(0;-1).
Based on laboratory measurements. Rating determined in accordance with AS/NZS ISO 717.1-2004

**Table I:** Table of results for the 400 x 4 SonicClear panels with a 120mm overlap mounted on a 500 Series Acoustic Track.

| 1/3 Octave Centre Frequency Hz | Sound Transmission Loss : R dB | $R_w$ 19 Reference Curve | 95% Confidence levels, dB. |
|---|---|---|---|
| 100 | 10.3 | 0 | 3.5 |
| 125 | 11.2 | 3 | 2.7 |
| 160 | 14.4 | 6 | 1.4 |
| 200 | 17.0 | 9 | 1.3 |
| 250 | 16.8 | 12 | 1.4 |
| 315 | 17.3 | 15 | 0.8 |
| 400 | 17.4 | 18 | 0.8 |
| 500 | 18.4 | 19 | 1.0 |
| 630 | 18.8 | 20 | 1.1 |
| 800 | 19.2 | 21 | 0.7 |
| 1000 | 18.3 | 22 | 0.6 |
| 1250 | 17.5 | 23 | 0.6 |
| 1600 | 19.2 | 23 | 0.6 |
| 2000 | 20.4 | 23 | 0.5 |
| 2500 | 19.4 | 23 | 0.5 |
| 3150 | 20.1 | 23 | 0.5 |
| 4000 | 20.8 | - | 0.5 |
| 5000 | 21.8 | - | 0.5 |

**Chart I:** Graph of results for the 400 x 4 SonicClear panels with a 120mm overlap mounted on a 500 Series Acoustic Track.