EHSR Group PTY LTD

Noise Monitoring Report 2020

Final.

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Contents

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Terms and Conditions.

Introduction.

EHSR Group Pty Ltd (EHSR) have been commissioned by Highland Pine Products to provide NSW EPA with an update on noise mitigation works undertaken as required under special condition U1 of Environmental Protection Licence (EPL) 11229.

In Detail, the objective of this report is to:

- Provide detail on mitigation works to date considering Table 1 of the original PRP as approved in 2013.
- Provide detail on noise reductions achieved at locations within the premises.
- Provide detail on environmental noise results achieved at sensitive receptors.
- Provide an update on future works (proposed) to reduce emissions further.

Background.

Highland Pine Products Pty Limited is a joint venture between AKD Softwoods (AKD) and Boral Timber. HPP operates sawmilling operations as part of the overall Oberon Timber Complex (OTC). The joint venture was originally formed in August 2000 following then owner Carter Holt Harvey's (CHH) acquisition of the CSR sawmill (Site 2) located on Albion Street. In 2018, AKD purchased CHH's 50% share in the joint venture.

HPP operates an integrated timber processing facility over two adjacent sites located on Lowes Mount Road and Albion Street, less than one kilometre north of Oberon. **Figure 1** is an aerial photograph of the Oberon Timber Complex showing all site boundaries.

Site operations are governed under two instruments being the original Development Consent (issued by the now Dept Planning, Industry and Environment (DPIE) and two EPL's issued by the NSW EPA.

In 2013, Highland Pine Products (**HPP**) and the NSW EPA engaged in a Pollution Studies and Reduction Program (PRP) delivering a long term and continuous noise improvement process towards achieving an overall 5 dB(A) noise reduction at the end of the 10 year program.
Key milestones considered short term (1-2 years), medium term (1-6 years) and long term (1-10 years) attenuation targets with yearly updates provided as part of the Annual Return submission. At the end of the PRP (in 2023), the EPA propose the night-time noise limit will revert to 45dB(A).

This report provides a review of work completed to date considering short and medium term targets (1-6 years).

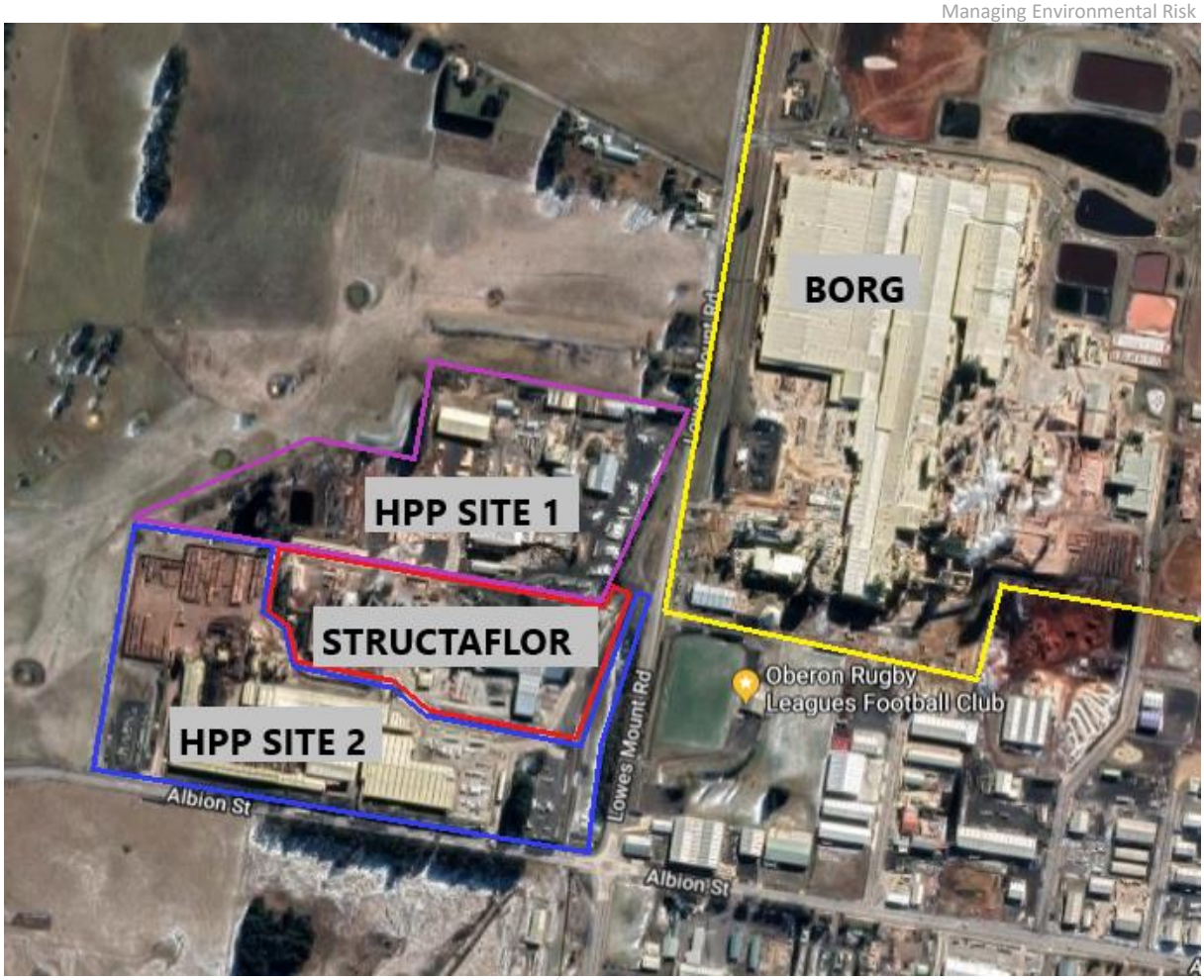

Figure 1: Oberon Timber Complex – Site Boundaries.

Statutory Approvals – Highland Pine Products.

Authority	Instrument	Location
NSW EPA	EPL 11229	Site 2 – Albion St Oberon
	EPL 887	Site 1 – Lowes Mount Rd Oberon
	EPL 105	LOSP - Stewart St (Blayney Rd) Bathurst
DPIE	Development Consent 403-11-00	Site 2 – Albion St Oberon Only
Oberon Council	Various DA's (minor works)	Site 1 and 2 - Oberon

Table 1: Statutory Approvals – Highland Pine.

Result.

Mitigation work to date.

As part of the original 2013 PRP and considering historical noise attenuation work (and studies), a table of potential noise sources (by location) was developed and provided to the EPA. Options for attenuation were based on considered opinion at the time, designed to be suitably flexible given the scale/nature of diffuse sources, and was outcome based.

A significant body of work has been undertaken to date aligning with the short/medium term options as detailed in the original PRP. **Table 2** provides a summary of work to date by location. Work to date has targeted attenuation along the southern boundary of Site 2 given its proximity to sensitive receptors.

Environmental noise impacts from operational activities have been mitigated through:

- Attenuation at the source (quieter running plant changed out as part of routine maintenance and upgrades) (12 locations).
- Attenuated through engineering controls (installation of guides and control systems to reduce log impact noise and changes to plant) (5 locations).
- Attenuation of buildings and structures (encapsulating noise and reducing break-out) (7 locations).
- Administrative controls (closing of roller doors, operational changes so activities do not occur during night-time hours) (6 locations).
- Eliminated (process changes which allow for the removal of the source) (3 locations).

Location	Area	Work completed	Noise mitigation work impact.
Green mill	Log line	Installation of new residue cyclones.	Heavier gauge material – reduction in chip break-out noise.
		Install sound wall panels – log yard west and north perimeter walls.	Reduce impact from log yard operations on receptors.
		Installation of low frequency reverse beepers on all plant used on site at night.	Reduction in high frequency discharge.
		Extend bunker wall cladding.	Contain machinery noise after house when the bunker requires filling.
	Debarker	Refurbish debarker door.	Allowing closure of a doorway that was historically opened. Reducing noise breakout.
		Piping system replacement.	Allowing increased flow, reducing noise generated from hydraulic systems.
		Install sound wall panels – log yard west and north perimeter walls.	Reduce impact from log yard operations on receptors.
	Maintenance hot work area	Double skinned walls.	Reduced breakout from building (specifically when working at night) during maintenance activities.
	Quad saw	Installation of sound installation and cladding to sorter building internal eastern wall.	Reduction in noise breakout throughout the Green mill.
		Installation of locking mechanism to quad saw housing doors.	Saw is enclosed. Locking mechanism on maint access door to ensure the saw must be closed before it will operate. Significant reduction in noise breakout.
		Installation of pneumatic silencers on spike roller cylinder discharge.	Reduce air discharge noise.
		Control logic changes.	Operational changed to process logic to ensure specific log impact noises are eliminated.
		Install drop down cone guides.	Reduce log fall and impact noise.
	Catech	Upgrade board edger control and scanning system (pneumatic controls upgrade)	Upgrade and installation of silences on pneumatic control systems.
	Profiler.	Control logic changes.	Operational changed to process logic to ensure specific log impact noises are eliminated.
	4 saw and 5 saw.	Installation of sound installation and cladding to sorter building internal eastern wall.	Reduction in noise breakout throughout the Green mill.
		Control logic changes.	Operational changed to process logic to ensure specific log impact noises are eliminated.

Location	Area	Work completed	Noise mitigation work impact.
	Sorter infeed, Bin sorter, Trim saws Sorter bins, Stacker	Installation of sound installation and cladding to sorter building internal eastern wall.	Reduction in noise breakout throughout the Green mill.
	Stacker Stickers	Installation of roller door and enclosure	Reduction in noise breakout. Conveyor now enclosed.
		Process to ensure roller door is closed outside daylight hours.	Reduction in night-time noise impacts – all Green mill.
	Thin board area	Process to ensure roller door is closed outside daylight hours.	Reduction in night-time noise impacts – all Green mill.
Dry mill	Strapper	Hydraulic system enclosed	Acoustic enclosure around strapper hydraulics. Reduction in external breakout.
	Stacker	Removal of pneumatic system.	Replaced pneumatic system with electric. Eliminated air discharge noise.
	Bin Sorter	Process to ensure roller door is closed outside daylight hours.	Reduction in night-time noise impacts – all Dry mill.
	Trim saw Outfeed	Dust collector pneumatic valves silencer installed.	Reduction in air discharge noise.
		Secondary hoist installation.	Installation of electric hoist – Removal of hydraulic system as part of plant upgrade.
	Re-entry, stress grader. Planer outfeed deck, pack tilt hoist, residue areas, ultimiser.	Process to ensure roller door is closed outside daylight hours.	Reduction in night-time noise impacts – all Dry mill.
	Planer	Located within an acoustic enclosure which cannot run with doors opened	Reduction in noise impacts. Inside building.
	Residue area	Enclosure installed around rotary valve.	External component – reduction in tonal discharge.
		Hogger cycle frequency reduced to reduce impact noise.	Reduction in impact noise frequency due to reduction in cycle times.
	Treatment line	Secondary hoist installation	Installation of electric hoist – Removal of hydraulic system as part of plant upgrade.
	External areas – eastern side of mill.	Roller doors now closed after hours at sticker conveyor (Greenmill), Greenmill discharge and Drymill re-entry.	Reduction in operational noise impacts discharging to sensitive receptors in the east.
Boiler	Deaerator	Steam discharge	Silencer installed.
	Fuel Shed	Replaced large section of fuel shed roof	Replaced roof to enclose operational noise.
	Boiler system	Replace pipe lagging	Reduction in breakout from steam travel through pipework.
	Boiler system	Install control flowmeter	Controls overpressure discharge (steam flow discharge noise).
Site 1	Saw shop	Removed external compressor	Eliminated noise source.
	Estate	Installation of noise mound.	Western side site 1 continuation of the noise mound along site 2 (Hebel wall) and site 1 (earthen wall)
Treatment plant	Mixing area (external)	Replace pneumatic pumps with electric drive pumps	Elimination of multiple noise sources.
Site 2	All Site	Modelling exercise to establish next steps of attenuation.	Established requirement to attenuate Greenmill wall.
	All site	Annual noise survey	Track performance – assess next steps.

Table 2: Summary of work completed to date.

Noise Reduction – Site locations.

As part of the 2013 PRP, Knox OHS provided near field measurements at multiple locations. To provide comparison between results obtained in 2013 and 2020, monitoring was undertaken between 18th and 3rd Dec 2020 with the plant in "normal" operating conditions.

Attended monitoring was undertaken using a ISLM 1353 type2 noise meter, calibrated using 1000Hz oscillation at 94dB(A) and is provided in detail in **Table 3**. Readings taken at usual operator locations, at 1m or closest safe approach from equipment. All results represent integrated 60 second L_{Aeq} values.

Site Area	General Location Description	2013 Result dB(A)	2020 Result dB(A)
Log line	General ground level areas	76-80	75-78
	Transfer conveyor to Mill, at 3 – 5 m	80-88	80-85
	Step feeder to Mill, at 1m	92-97	92-94
	Ground level below steps to Saw line Control Room	85-91	83-84
Debarker	Inside, no logs going through	81-83	83-85
	Inside, debarking logs	90-96	94-99
Quad bandsaw	Infeed	92-97	90-94
	Outfeed	92-95	89-94
	Inside main Saw line Control Room	65-67	64-65
Catech Saw outfeed		95-97	92-95
	Inside Catech Control Room	86-89	83-84
Profiler		95-97	93-97
4-Saw	Cutting	95-97	92-96
	Saws idling	89-90	89-92
5-Saw	Cutting	95-102	95-97
	Saws idling	90-91	88-89
Sorter infeed		89-92	90-94
	Background at ladder, frequent impact noise to 95-97 dB(A)	89-92	92-99
Bin Sorter		95-98	89-92
Trim Saw	Saws cutting	92-95	92-96
Sort bins	Top walkway	88-92	83-88
Stacker	Operator Control Station	90-96	90-96
Stacker stickers		83-91	80-91
	When paused	72-74	76-78
Open air north side of Sorter		67-72	68-70
Thin boards area	Operators location	82-85	80-85
	At conveyor	85-88	85-88
	Operator Control Station		88-90
Laserframe strapper	Operator locations	83-86	83-85
	Outside air 10m east of strapper	65-70	62-65
Stacker area	Operator locations: 86-88 when line paused	94-99	92-95
Bin sorter area	Operator Control Station	87-97	85-88
Trim saw outfeed		94-97	94-97
Tong Dog infeed		89-93	90-91
Re-entry/ Tilt hoist	Landing deck	91-96	93-95
Stress grader area		97-100	90-94
Planer outfeed deck	At operator station	94-98	89-92
Planer deck	Planer located in enclosed room, no access while operating	88-93	89-95
Pack tilt hoist	Pack infeed	87-93	87-95
Residue area		89-91	87-87
Ultimizer	Infeed conveyor from planer	88-90	86-88
	Control panel near saw	90-93	90-93
Treatment line	Unscrambler	90-94	90-93
	Infeed	88-91	88-93
	Stacker	88-92	86-88
Outside air, western side of Mill	Near open shutter at re-entry tilt hoist	78-80	75-79
Outside air, eastern side of Mill	10m from open shutters at Pack infeed and Stickers area, background	75-77	69-72
	Same location when stickers dropped into cradle	81-83	79-80
De-aerator venting from boiler	Continuous hiss audible in outside areas at ground level, north and west of Planer Mill	70-74	68-71

Table 3: 2013 and 2020 attended monitoring results – by workstation.

Results indicate a marginal dB(A) reduction at ~60% of locations compared to the 2013 monitoring round, with no change or an increase in levels at others. Contributing to the results are product mix,

process throughput during sampling and other operational activities adjacent to work centres (such as forklift traffic, loaders, maintenance activities etc.). While targeted attenuation inside the plant (Table 2) has shown a measurable reduction at some work centres (Table 3), the volume and frequency of variable noise sources within the production hall make near field attended monitoring results an unreliable measure of performance overall.

Environmental noise results

Annual environmental noise monitoring covering the last 5 years has been undertaken by ACA (2015/16, Knox (2016/17 AR) and Atkins (2017/18, 2018/19 and 2019/20 AR's). **Figure 2** details sensitive receptor locations monitored for compliance. As noted in the ACA 16/17 noise monitoring report:

> *Previous noise reports completed by Knox OHS (reviewed by us) have indicated no discernible impacts from HPP operations at points 4 and 5. In their most recent report (2015), Knox suggested HPP should assess these points to once again confirm no impacts from operational changes over time. Given the close proximity to the Borg operation and the Woodchem facility, the impacts from the Highland Pine Operation are not measurable at locations 4 and 5.*
>
> ACA (2016).

Covering the last 5 years of monitoring, locations 1, 2 and 3 have been assessed for impact from HPP. **Table 4** provides a description of each location. Detailed external noise reports are provided as **Appendix 1** and summarized in **Table 5**.

Figure 2: Noise sensitive locations – monitoring points.

Reference Location	Description.
1	26 West Cunynghame St.
2	12 Herborn St.
3	Oorong – Cnr Albion St and O'Connell Rd

Table 4: Noise sensitive locations – Description.

Detail		Reference $L_{Aeq15min}$			
		Consent Limit 55dB(A)	Consent Limit 50dB(A)	Consent Limit 50dB(A)	Complies
Reporting year	Reference Location	Day 7am-6pm	Evening 6pm-10pm	Night 10pm-7am	
2015/16	1	48	47	46	Y
	2	48	49	47	Y
	3	44	44	36	Y
2016/17	1	51	49	49	Y
	2	54	51	51	N
	3	57	52	48	N
2017/18	1	36	36	47	Y
	2	36	39	46	Y
	3	35	35	45	Y
2018/19	1	40	38	48	Y
	2	45	48	48	Y
	3	40	45	47	Y
2019/20	1	45	45	46	Y
	2	45	45	48	Y
	3	40	45	40	Y

Table 5: Summary of external monitoring – 2016-2020.

Environmental Noise – Discussion.

Monitoring over the 5-year period has demonstrated good compliance against EPL mandated limits. In 2016/17, the report by Knox noted other sources were audible at receptors that contributed to the result including an increase of 8db(A) L_{90} (background noise) due to adverse weather. To determine compliance with EPL 11229:

- Noise must be measured at or computed for 'Oorong' or any other noise sensitive locations (such as a residence/school along Herborn or West Cunyngham Street, Oberon).
- A modifying factor correction must be applied for tonal, impulsive or intermittent noise in accordance with the 'Environmental Noise Management - NSW Industrial Noise Policy (January 2000).
- The noise limits identified in the licence apply under all meteorological conditions except:

  a) during rain and wind speeds (at 10m height) greater than 3m/sec: and

  b) under 'non -significant weather conditions.

In 2017, the NSW Industrial Noise Policy (2000) was updated to the Noise Policy for Industry (2017). Table C1 provides modifying factors to be applied and process for determining their application when completing an environmental noise assessment. Throughout the reporting period, night-time modifying factors have been applied to measurements at all locations.

Typically, results have been driven by the sorter/stacker at the green mill and log infeed to the mill, with modifying factor applied due to noise being intermittent, >5db and clearly audible at the receptor. Of note throughout the reporting period, activities at the adjacent Borg manufacturing facility are also audible at each sensitive receptor.

Without the application of the modifying factor, results generally show good compliance with the 2023 night-time $L_{Aeq\ (15\ Min)}$ dB(A) limit of 45. Future attenuation will target the drivers of intermittent, intrusive noise discharge at the source with the objective to eliminate the application of modifying factors (specifically during the night-time period).

2021-2023 – Attenuation Plan.

In Q1 2021, the plan for the final three years of the PRP will be confirmed. Monitoring to date has clearly identified sources that impact on sensitive receptors and the feasibility of attenuation is currently being assessed. Key target areas include the green mill sorter/stacker area and the log yard, as both locations dominate noise emissions and provide for intermittent discharge.

Broadly, the 2023 plan will include:

- Assess required changes to engineering design for key noise emitters. May be attenuation at the source (multiple contributors) or attenuation of building. Building attenuation includes assessment of fire risk, BCA compliance and structural modifications required. Identified target areas and focus on management of modifying factor emissions (intermittent at night).
- Finalise engineering design for log yard upgrade including log decks and log ladders.
- Design and seek capital approval for all tasks.
- Supply and install.
- Monitor as per current monitoring regime.
- Continuation of attenuation (minor works) program. Attenuate at the source to improve near field monitoring results.
- Annual update to the EPA as per the PRP.

Conclusion.

EHSR Group Pty Ltd (EHSR) has been commissioned by Highland Pine Products to provide NSW EPA with an update on noise mitigation works undertaken as required under special condition U1 of Environmental Protection Licence (EPL) 11229.

A significant body of work as detailed in **Table 2** has been undertaken considering the original 2013 PRP (short/medium term). While mitigation works to date has resulted in improved near field results at work centres, given the vast numbers of variable contributors (such as product throughput, speed, type and frequency, mobile plant etc.), these results must be viewed with caution.

At three sensitive receptor locations, ongoing compliance with the current PRP noise levels has been demonstrated, with modifying factors resulting in a 5dB(A) penalty being applied during night-time monitoring due to intrusive, intermittent noise discharge. These generators will be targeted for future mitigation work, specifically at the green mill sorter/stacker and on the log infeed to the mill.

The 2021-2023 attenuation plan will require significant capital works and the benefit to sensitive receptors will need to be quantified. As contributors to current impacts are reduced, other sources (on and off site) may begin to dominate and drive future non-conformances.

Appendix 1: Environmental noise reports 2015/16 to 2019/20