

Rose-Anne Hawkeswood  
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Department of Planning, Industry and Environment.  
4 Parramatta Square, Parramatta NSW 2150

**Re: WSP report on lead at Lue school and Mr Bollers' letter  
in relation to Bowdens Silver Mine (SSD 5765).**

**Reference: DTC240820-RF1  
24th August 2021**

Dear Ms Hawkeswood,

Thank you for your email correspondence of 19/08/21, 20/08/21 and 24/08/21 in which you provide an investigation report from WSP<sup>1</sup> for lead at Lue school and a letter from Mr Boller in which he outlines concerns regarding the assessment of lead exposure in the EIS for the proposed Bowdens Silver Mine (SSD5769).

You have requested advice whether either the WSP report or information in Mr Boller's letter changes the conclusions of the EIS lead risk assessment. Also if:

- The sampling undertaken for the school study indicates that the baseline studies undertaken for the EIS lead risk assessment are inadequate.
- The school assessment is relevant for assessing health risks from the proposed Bowdens Silver Mine.

***The WSP Report***

It is not the intent of this note to provide a scholarly critique of the WSP risk assessment methodology or its recommendations. Rather, as indicated above, it is to advise whether the WSP report or Mr Boller's letter influences the findings on health risk in the EIS, i.e. the human health risk assessment (HHRA) at Appendix 7 of the EIS, for Bowdens mine.

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<sup>1</sup> The WSP report is entitled "Lue Public School Lead Risk Assessment", dated 29 July 2020 and was commissioned by School Infrastructure NSW (SINSW).

The WSP (2020) report has attached a 2013 report of a lead investigation by JBS for lead at the school<sup>2</sup>. The JBS (2013) report provides the 'background' data cited in the EIS (i.e. in the human health risk assessment (HHRA) at Appendix 7 of the EIS.

Both WSP (2020) and JBS applied the same or very similar procedures to collect dust and soil samples for analysis of lead. While different laboratories were used for analysis both were NATA accredited and therefore it is very unlikely there would be material differences in results based on analytical uncertainty.

The following is noted:

- a) The amount of lead in paint that contains lead is reported by WSP as 4.9 - 11%, this is consistent with the HHRA Table 4.2 where percentage of lead in paint is indicated to be 3 - 8.1%.
- b) The HHRA does not report lead levels on indoor surfaces at the school. However for 14 dwellings in Lue concentrations of 0.002 - 9.92 mg/m<sup>2</sup> are reported. Although individual results are not provided in the HHRA, given variation between locations is expected these amounts appear consistent with concentrations of <0.1 - 1.5 mg/m<sup>2</sup> reported for the school in the WSP report.
- c) Lead in air within the school buildings was not addressed by the JBS (2013) investigation, hence it is not reported in the HHRA; WSP (2020) report lead in air to be very low, < 1 µg/m<sup>3</sup> as an 8 hour average. It is difficult to compare this with concentrations in community ambient air due to different methods for collecting air and particulates, and reporting of results (i.e. different averaging times).
- d) The WSP risk assessment for lead is different from that in the HHRA. The WSP risk assessment employs a risk-management matrix in order to make recommendations on how to deal with exceedances above guidelines. On the other hand the HHRA assesses lead exposures from all sources and compares them against toxicity reference values to judge whether health effects might occur. WSP makes precautionary recommendations regarding access to various parts of the school based on the matrix. These precautions are not necessarily a reflection of likely health risks for persons accessing those areas since factors such as amount of media (e.g. dust, soil) contacted, length of time in contact, and frequency of contact are not explicitly considered. Nevertheless the WSP report concludes there is low risk posed by lead in dust inside the school. Similarly, the fact that only one soil sample out

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<sup>2</sup> The JBS (2013) letter report is entitled "Bowdens Silver project via Lue NSW- Lead in Dust, Paint and Soil, Lue Public School", dated 18 June 2013.

of 17 taken at the school exceeded the residential guideline for lead indicates the risk of exposure to lead in soil at the school is also low. This does not negate the possibility of small 'hot spots' associated with paint chips in soil. This however is a specific issue for the school, and perhaps for individual dwellings in Lue that have lead based paint. It is not an issue associated with emissions from the proposed mine. Lead in tank water at the school (only 1 of 6 samples from drinking water outlets was above the NHMRC drinking water guideline) is also a roof specific issue rather than one of mine emissions since the mine was not in operation at the time water samples were obtained.

- e) WSP (2020) adopts different guidelines than used in the HHRA. For example the revised HHRA uses more stringent guidelines for lead in dust on indoor hard surfaces.
- f) A major difference between the WSP (2020) and JBS (2013) investigations (the latter reported in the HHRA) is the lead concentration in bulk dust gathered from ceiling roof space (void). WSP report <1 and 1 mg/kg dust from two samples but JBS (2013) report 48,000 mg/kg from the single sample obtained. The most likely explanation for the difference is different sampling locations and perhaps the JBS sample containing lead paint particles. Both investigators recommended ceiling roof access be restricted and appropriate protection equipment worn when accessing. Children and staff do not enter these spaces. It is noted that dust data from roof voids is not used in the HHRA as it is not associated with mine emissions (which are yet to occur).
- g) Both WSP (2020) and JSB (2013) concluded risk of exposure to lead at the school was low and both essentially made the same precautionary recommendations for limiting exposure. The WSP recommendations were more comprehensive and have been implemented by NSW Department of Education – School Infrastructure.

**Overall, it is my opinion that the Lue school assessment does not impact the workings or conclusions of the community health risk assessment conducted in the HHRA for emissions from the mine.**

### ***Mr Boller's letter***

It is not the intent of the following comments to justify the workings or conclusions of the HHRA. Mr Boller's letter contains three major concerns.

- i. The lead concentration reported in the EIS of 48,000 mg/kg in roof void dust (Table 4.2 in HHRA) is a concern. Mr Boller refers to the Dept of Education investigation (i.e. the WSP

2020 investigation) finding of very different results than cited in the HHRA. He has therefore concluded the lead data in the EIS/HHRA is inadequate and highly unreliable. Some information on this discrepancy is at (f) above. Further commentary on the data characterising the existing lead status of Lue township should be made by the proponent and/or authors of the EIS.

- ii. The data characterising the environmental lead status of Lue is considered to be out of date. Cited is research carried out by Professor Barry Noller (no date provided). I am not aware of this research but from the descriptions in Mr Boller's letter I suspect he means the work done for the Lue Action Group (LAG) by Professor Taylor of Macquarie University, this was done in 2012. Comments on the information gathered by Macquarie University have been provided in a separate document<sup>3</sup>. From the information I have Mr Boller is correct in that the lead data describing the existing situation in Lue is almost a decade old. Whether the Lue baseline data should be updated is a matter for others to deliberate.
- iii. Mr Boller cites Professor Noller as stating the guidelines used in the HHRA are also out of date, this was also raised in the LAG submission against the project that was written by Professor Taylor of Macquarie University. The revised HHRA has incorporated the US EPA (2019) criteria as suggested in that submission.

**My conclusion is neither the WSP report nor information in Mr Boller's letter changes the conclusions of the EIS lead risk assessment.**

I hope this assists with your deliberations. Should you have further questions please let me know.

Yours Sincerely



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Roger Drew, PhD, DABT, FACTRA  
Toxicologist & Health Risk Assessor

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<sup>3</sup> This Drew Toxicology Consulting report is entitled "Comments & Review of LAG Submission on the EIS for Bowdens Silver Mine (SSD 5765)", document number DTC220720-RF and dated 23<sup>rd</sup> August 2021.

**About the author:**

Dr Roger Drew is the principal consultant of Drew Toxicology Consulting. He has primary degrees in biochemistry and pharmacology and postgraduate degrees in toxicology. Postdoctoral training was undertaken at the National Institutes of Health, National Cancer Institute in the USA. He has more than 40 years of toxicological and risk assessment experience in academia, industry and consulting. For 12 years he taught medical students at Flinders Medical Centre while undertaking research on the toxicology of chemicals and medicines. He then joined ICI Australia for 10 years as corporate toxicologist managing the Toxicology Unit and was responsible for providing toxicological advice to the executive team, strategic business units and customers. For the last 20 years he has been an independent consultant servicing a range of industries and Government authorities. He has significantly participated in developing health based risk assessment practice in Australia. Dr Drew is one of just a few toxicologists in Australia certified by the American Board of Toxicology.

While employed in the above roles Dr Drew was also Adjunct Professor in Biochemical Toxicology at RMIT University and is currently Adjunct Associate Professor in the Department of Epidemiology and Preventive Medicine, Monash University. He teaches various aspects of toxicology and risk assessment to undergraduate and postgraduate students at local Universities. He is a member of professional toxicology societies and is a recognised national and international expert in toxicology and risk assessment. He has served on the editorial board of the international scientific journal "Regulatory Toxicology and Pharmacology" and has more than 50 peer reviewed publications and reports.