Appendix 8

Response to Submission from Lue Action Group on Visual Impacts

prepared by

Richard Lamb and Associates

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Bowdens Silver Project SSD_5765

Response to Submission from Lue Action Group on visual Impacts

Report prepared for: Bowdens Silver Project

Prepared by: Dr Richard Lamb

24 February 2022



23 December, 2021

Mr Nicholas Warren RW Corkery and Company Pty Ltd

Dear Mr Warren,

Bowdens Silver Project (Amendment Submissions Report) SSD-5765

Response to Submissions on visual impacts raised by the Lue Action Group

Thank you for the opportunity to be of further assistance to you on this project. Richard Lamb and Associates (RLA) prepared the Visibility Assessment in the EIS for SSD-5765.

We note part of an objection from the Lue Action Group (LAG), submitted to the NSW Department of Planning, Infrastructure and Environment, which relates to (i), Visual Impacts. The objection cites an assessment report undertaken by Engeny Water Management (Engeny) concerning the potential visual impacts of the proposed modified 500kV transmission line alignment.

This report is a response to the LAG objection, to the Engeny report on which it is based, and also provides analysis of a proposal to relocate part of the transmission line by up to 300m to the east, in relation to views from a number of rural residences west of the mine Site.

Documents Consulted

LAG Technical Review - Visual Assessment, SSD-5765, prepared by Engeny Water Management (Engeny), dated 18 August, 2021.

Lue Action Group (LAG), Objection (Amended Report), including section (i) Visual Impacts of realignment of 500kV transmission line, dated 18 August, 2021.

RW Corkery and Company Pty Ltd, graphics (See Appendix 1) including:

Google Earth KMZ file showing aerial overlay alignments of the existing powerline, the alignment in the EIS and the proposed amended alignment

Figure A: Existing and proposed Transmission Line, dated 21 December, 2021.

Plans of 500kV Transmission Line Visual Analysis, Figures B, D, F and H (Receivers R35, R36A, R87 and R37, respectively).

Visual Analysis Cross Sections, Figures C, E, G and I (Receivers R35, R36A, R87 and R37, respectively).



The Engeny report to LAG

The Engeny report is based on a Visual Radial Analysis of the likely visibility of three of the transmission towers proposed. The report claims in relation to the alignment proposed:

"it is expected that approximately 50% of the proposed re-aligned power transmission line will be clearly visible from the vast majority if not all receivers in the Lue Village and surrounding area. This represents a significant change to the viewshed characteristics for the Lue Village and surrounding receivers, compared to the current situation".

Referring to the RLA Visibility Assessment Report, the objection from LAG states:

LAG agrees that the proposed re-aligned power transmission line is largely in country with similar visual and physical characteristics to the existing line and the new line would be likely to be compatible with the appearance of the existing line. However, the proposed power transmission line alignment is located at a higher elevation than the existing alignment and as such the natural topography does not screen the re-aligned power transmission line. Our analysis shows that the proposed re-aligned power transmission line is in a different visual catchment and impacts receivers which are currently not impacted by the existing transmission line. The proposed re-aligned power transmission line will therefore involve a change from the existing natural viewshed from the general area of Lue to one which includes a transmission line.

LAG agrees that the new line would be compatible with the existing line but is concerned on the basis of the report by Engeny that the visual impacts would extend to a larger visual catchment and potentially cause visual impacts that were not adequately assessed in the Visibility Assessment report.

It is correct to say that part of the alignment that was proposed in the EIS and assessed in the RLA report is partly at a higher elevation than the existing transmission line and is potentially visible to a wider visual catchment, particularly to the west of the existing alignment. It is also inevitable, as the alignment is toward the western edge of the Mine site, compared to the existing alignment, that there could be greater potential visibility to some viewing places in the rural landscape than applies to the existing alignment. It is also noted that structures associated with the existing powerline are visible from parts of Bara-Lue Road west of the mine Site and therefore the visibility of towers in the proposed realigned section of the powerline would not be new features in the landscape.

The potential visibility of the transmission line and other infrastructure was assessed in the RLA report. It was not claimed that there would be no visibility of the re-aligned transmission line. The line would be partly visible and would, as stated in the RLA report and as agreed by LAG, be compatible with the existing line, which is partly visible from isolated parts of Lue Village and extensive areas of Lue Road and other roads such as Pyangle and Powells Road and the intervening rural landscape.

The method of assessment that was adopted by Engeny is not objected to, as it is conventional. It represented three towers, assessed at the maximum potential height of 60m and prepared Radial Analysis graphics. These are similar to Zone of Visual Influence (ZVI graphics) that are often prepared for other infrastructure projects, such as wind farms. As noted by Engeny, the Radial Analysis graphics do not take account of the presence of vegetation. This is an important issue with them, as they not only ignore the potential for vegetation to screen the view of the towers



themselves, but also ignore the foreground characteristics of the view back toward the towers, for example from Lue Village, where vegetation substantially screens or blocks views, as identified in the RLA Visibility Assessment report.

The principles of potential visibility of the towers are shown by means of sections in the Engeny report. The sections show that one of the three worst-case towers would not be visible from Lue, but the other two would be visible. On the basis of that evidence and the Radial Analysis graphics, the report by Engeny on which the objection from LAG relies, makes unjustified generalisations about the likely visibility and therefore the visual impacts of the amended transmission line's location.

The summary statement is:

"it is expected that approximately 50% of the proposed re-aligned power transmission line will be clearly visible from the vast majority if not all receivers in the Lue Village and surrounding area".

The Radial Analysis graphics represent theoretical visibility only of the top of the transmission tower analysed in each case. The towers modelled were at the maximum potential height, whereas individual tower heights would be determined by factors such as intervening topography and distance between tower locations and may be lower, leading to a smaller Zone of Visual Influence and therefore lower potential visibility. Clearly, topography and vegetation would also have the effect of screening or blocking the view of the remaining parts of the towers leading to lower theoretical visibility and a lower proportion of the alignment being visible.

In addition, the analysis of visibility from the public domain and from some private domain viewing places in the RLA Visibility Assessment (Annexure 1) shows that even if it was theoretically possible for parts of half of the transmission towers in the proposed re-alignment to be visible within the area shown in the Radial Analysis graphics, in Lue, there would still be minimal visibility of the transmission line from the Village.

This can be established by reference to the analysis provided in Annexure 1 of the RLA Visibility Assessment from sites such as V30 (Plate 32), Martin Street, V31 (Plate 33), Martin and Swanston Street, V32 (Plate 34), Harpur and Swanston Street, V33 (Plate 35) Bayly and Swanston Street and V37 (Plate 39), Swanston Street.

A sample of most recent Google Earth Streets views, representing the views from the streets inside the Village, such as Dowling Street, Barry Street, Harpur Street and Cox Street, also show that the theoretical visibility of the towers predicted by the Radial Analysis graphics by Engeny is not matched by the objective facts of the views from the Village. Views outward from houses in the Village would be likely to be even more constrained than the public domain views.

It is evident therefore, irrespective of the theoretical visual catchment provided by the Radial Analysis graphics of Engeny, that the amended transmission line location proposed in the EIS would not make a significant difference to the character or quality of views from Lue Village, as found in the RLA Visibility Assessment report. The claim that 50% of the alignment would be visible from the vast majority if not all receivers in Lue Village is exaggerated and is not justified.

The Engeny report to LAG also states:

"The visibility of the proposed power transmission line alignment would be further increased by the clearance of vegetation within the powerline easement. The extent of vegetation clearance required has not been defined in any of the documents reviewed or the contribution to the visual impact assessed".



There are a number of issues underpinning this statement that require comment. Firstly, the analysis produced by Engeny does not concern the visibility of the land surface under the powerline alignment. It does not show whether that land would be visible and therefore whether any clearing of the easement could be visible or cause visual impacts. The land underneath the alignment is highly varied in its topography, at a higher level than Lue and most of it would not even be theoretically visible from Lue Village. This is evident from the sections provided by Engeny.

Secondly, the alignment or clearing of vegetation, if necessary, would not be of significant visibility from the Village, for similar reasons that would limit the visibility of transmission towers.

Thirdly, in relation to the potential visibility of the easement, the alignment of the easement is oblique or perpendicular to the predominant view lines from the few receivers in rural land south-west of the mine Site, that might have a view of the new alignment (seen graphics by RW Corkery and Company Pty Ltd, in Appendix 1 in this report), which are to the south-west of the site of the proposed alignment.

Potential mitigation of visibility of the proposed alignment route

As noted above, it is inevitable that some aspects of the more westerly alignment of the transmission line would be more visible than the existing transmission line, to some receivers south-west of the alignment of the line. It is likely that there is visibility of existing towers to most receivers and that the new alignment would not be of a significantly different character in the landscape, however a potential to mitigate impacts has been explored by Bowdens Silver in an option to relocate the closest part of the proposed alignment further east and closer to the open cut pit, at a minimum distance of 300m from active mining, compared to the alignment proposed in the EIS. The distance has been reduced, consistent with the practical safety requirements of blast vibration assessment (SLR Consulting, 2020).

The alignment of the existing powerline is shown in plan on Figure A in Appendix 1 in blue with the towers numbered from north to south over the extent of the proposed amended alignment between E1 and E7. The alignment of the powerline proposed in the EIS is shown in purple. The proposed more easterly alignment is shown in green.

The alignments of the transmission lines are also shown on an image derived from a Google Earth KMZ file prepared by RW Corkery and Company Pty Ltd and presented in Appendix 1. This shows the existing powerline route, the alignment in the EIS that was the subject of the Engeny report to LAG and the proposed amended more easterly route. The towers have been numbered for ease of reference.

Objections to the proposed amended powerline were received in relation to receivers R35, R36A and R87, concerning visibility of the powerline. We understand that concern was also raised in relation to views from R37. The receiver locations are shown on the Google Earth KMZ image.

To assist in representing the likely visibility of the structures along the line, sections have been prepared from the receivers toward the towers most proximate to the view lines. The orientation of the view lines used for the sections are shown in plan on Figures B, D, F and H. Sections that correspond to these are shown in Figures C, E, G and I, respectively. The sections do not exactly align with the three sets of towers and therefore they cover a narrow horizontal field of view so as to include one tower in each alignment for the sake of a comparative analysis of potential visibility.



Comments in relation to each receiver follow.

<u>R35</u>

R35 is west-south-west of the closest part of the proposed powerline alignment. Three views analysed using sections are shown on Figure B in pink. The sections (Figure C) show that R35 has a view of one existing tower (Tower 9). The towers proposed in the EIS are closer and would be largely visible. The towers in the proposed alignment are of lower visibility, with Tower 34 being of highest overall visibility and Towers 32 and 33 being partly visible.

<u>R36A</u>

R36A is west of the closest part of the proposed powerline alignment. Three views analysed using sections are shown on Figure D in yellow. The sections (Figure E) show that R35 has a view of one existing tower (Tower 9). The towers proposed in the EIS are closer and Towers 21 and 22 would be largely visible. The towers in the proposed alignment are of significantly lower visibility, with Towers 32, 33 and 34 only partly visible.

<u>R87</u>

R87 is west-south-west of the visible part of the proposed powerline alignment. Three views analysed using sections are shown in Figure F in blue. The sections (Figure G) show that R87 has a view of one existing tower (Tower 9 and possibly partial views of Towers 7 and 8). The towers proposed in the EIS are closer and visible. Towers 32 and 33 in the proposed alignment are of reduced visibility compared to the towers proposed in the EIS, while Tower 34 is largely visible.

The analysis based on the sections shows that the proposed more easterly alignment has reduced visibility of the towers compared to the alignment proposed in the EIS. It also shows that the receiver has views of existing towers, meaning that the proposed alignment may change the appearance of the view in detail terms but not the presence of towers or the number of towers in the views.

<u>R37</u>

R37 is south-west of the closest part of the proposed powerline alignment. Three views analysed using sections are shown on Figure H, in green. The corresponding sections (Figure I) show that R35 has a partial view of two existing towers in the three views analysed (existing Towers 8 and 9). The towers proposed in the EIS are closer and Tower 21, which is shown in the topmost of the three sections, would be largely visible. In that section, the corresponding tower in the proposed more easterly alignment would be only partly visible. Overall, there would be visibility of one further tower, compared to the existing extent of visibility of towers, with the more easterly alignment now proposed.



Summary of visual impacts of the proposed powerline alignment

The potential visibility of individual lattice towers in the amended alignment of the 500kV transmission line proposed in the EIS would be greater than with the existing alignment, largely confined to individual rural property receivers to the south-west and south, beyond the outskirts of Lue Village. The character and quality of the landscape would not be significantly changed, as was found in the RLA Visibility Assessment report.

While it is agreed that the theoretical visibility of the alignment proposed in the EIS and assessed by Engeny would indicate visibility of two of the three towers assessed, from Lue Village, in reality there would be little if any change to the character and quality of the views. The visibility of the locations of the towers and also of land that may, if it is necessary, be cleared on the easement for the powerline, would remain low or negligible. Thus, the extent of visual impact assessed in the EIS by RLA remains valid and has not been underestimated.

An alternative alignment to what is proposed in the EIS and which was assessed by Engeny, is proposed by Bowdens Silver Project, moving the most potentially visible section of the alignment further to the east, to a minimum distance of 300m from active mining. Safety considerations prevent the alignment from being proposed closer to the open cut pit. This alternative alignment provides a reduction in the overall visibility of towers to rural receivers west and south-west of the mine Site, and therefore is a satisfactory mitigation measure for visual impacts.

Please do not hesitate to call us if you have any questions,

Kind regards Richard Lamb <u>Richard Lamb and Associates</u>

Appendix 1

RW Corkery and Company Pty Ltd extract from Google Earth KMZ file showing existing powerline alignment (Towers numbered 1-12), alignment proposed in the EIS (Towers numbered 13-25) and proposed alignment (Towers numbered 30-36)



Figure A, Existing Transmission Line (blue), Alignment in the EIS (purple) and proposed alignment (green)









Figure C, Visual Analysis Cross-Sections Receiver R35

















Figure H, Transmission Line Visual Analysis, Receiver R37







Google Streets views from Lue Village



Intersection of Dowling and Barry Streets, view north



Dowling Street between Barry and Harpur Street, view north





Intersection of Dowling and Harpur Street, view north



Dowling Street, view over school Site, view north





Cox Street east of hotel



Cox Street between hotel and cricket ground, one of many similar views in Cox Street