Presentation to Independent Planning Commission

Hills of Gold Wind Farm

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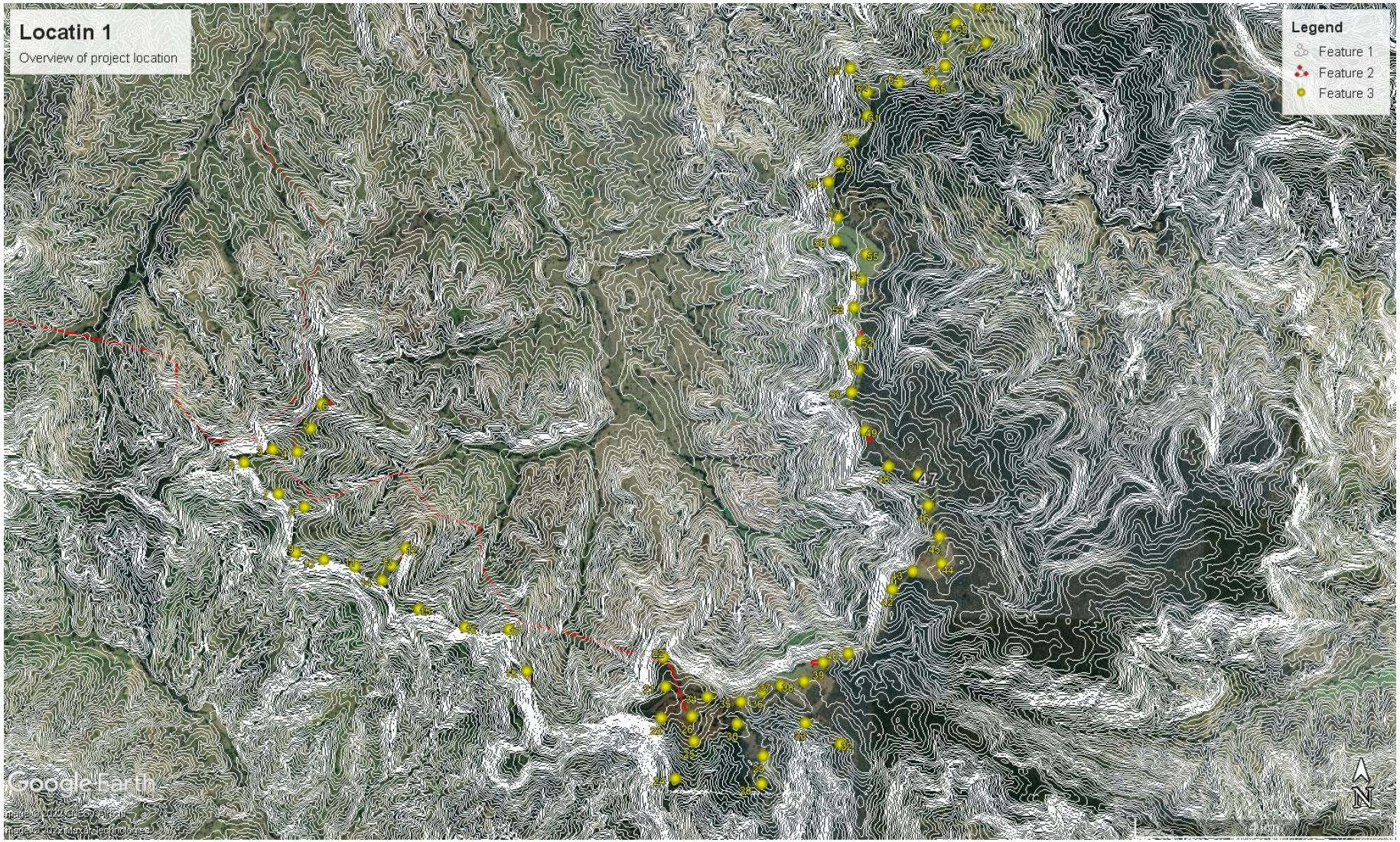
Location

- This project is located on the edge of a steep unstable basalt escarpment prone to mass movement along the watershed of three major river valleys
- 10 metre contours
- None of the published documentation gives any indication of the contours of the extremely steep terrain where the project is located



Information Gaps

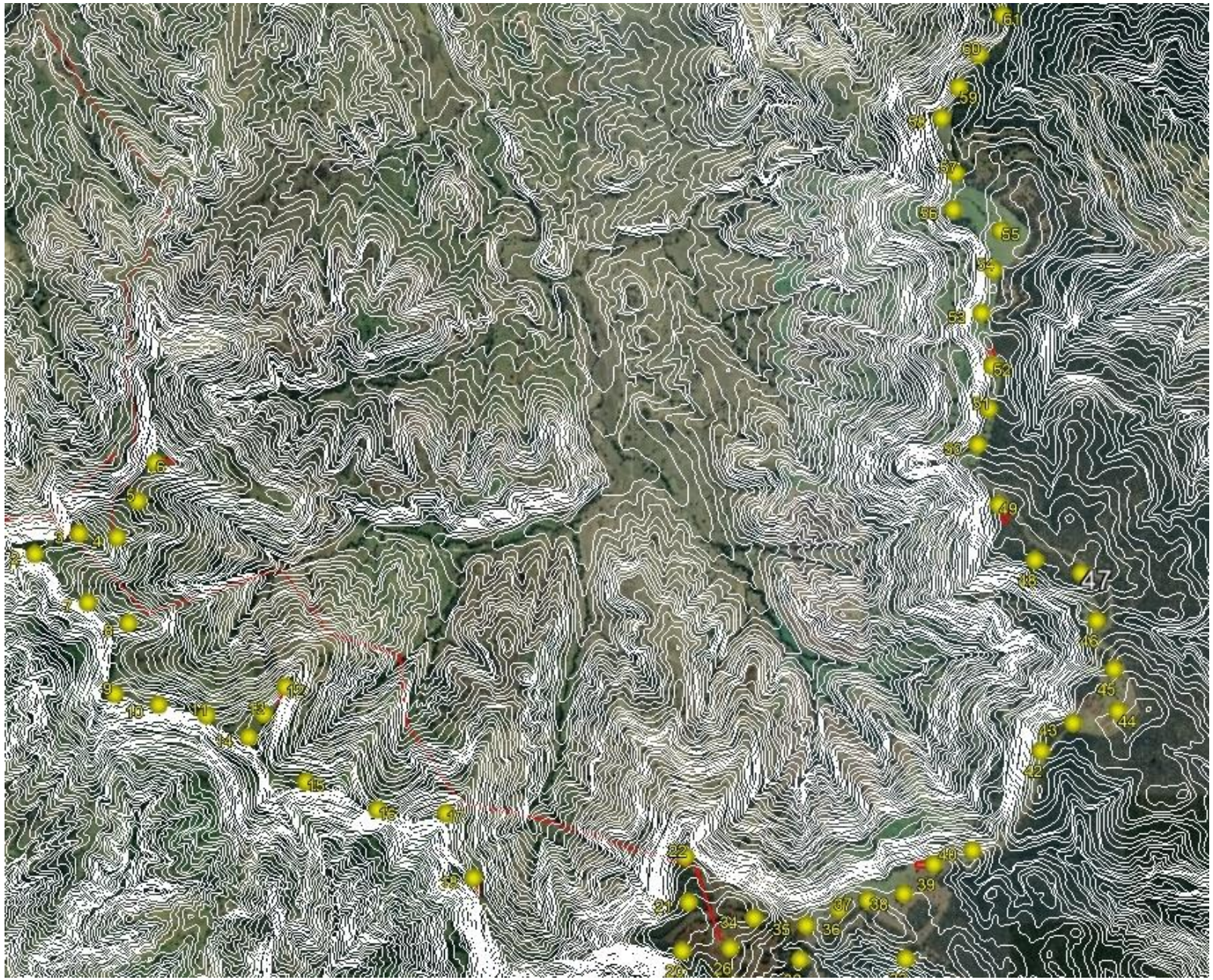
- Essential information not covered
- Rainfall has been underestimated
- Climate change impacts not addressed
- Hydrology not addressed
- Downstream flow impacts not addressed
- Structure of mountain or the impact on ground water not addressed
- Contour maps not used
- Misleading illustrations and examples – not applicable to project location
- Wider or regional environmental impacts not considered
- Site specific engineering not developed

Representation of a wind farm bearing no relationship to the terrain of the Hills of Gold wind Farm

(Source: **Department of Planning and Environment** dpie.nsw.gov.au State Significant Development Assessment Report (SSD 9679) December 2023)

Inappropriate Site

- Extreme slope gradiants
- 24 WTGs proposed within 10-30 metres of the escarpment edge - no room for 100 metres of micro sighting
- The initial drop of the 1st order stream south of WTG2 falls 60 metres in 35 metres.
- The 1st order stream west of WTG42 falls 490m in1400m.
- WTG6 sits on a 10-15m wide ridge which drops 90m in 150m.



Inappropriate sight for Wind Farm

High rainfall and steep terrain generates large volumes of high velocity flows even in 1st order streams.

- Most of the 1st order streams are on the edge of the escarpment and drop very sharply.
- WTG2 drops 350 metres in 950 metres to the end of the first order stream.
- The initial drop from WTG42 is 180metres in 40 metres
- WTG6 sits on a 10-15m wide ridge which drops 90m in 150m.
- The culvert for transverse track on the north arm of Talbots Creek is on a 1st order stream which falls 245m in 470m.
- In a rainfall event (similar to right) of 50mm rain in 1 hour the culvert will have to deal with approximately 5 megalitres in an hour.

Barnard River Flood January 2, 2010
Illustration of the volume and velocity of runoff from the tops between Hanging Rock and Crawney Pass
Eastern fall and western fall streams experience the same conditions

The Barnard River at normal flow level

The Barnard River, same location, January 2, 2010, after 40 minutes of rain which dropped 74mm at that location (850m)
Note the lowest lateral branch on the left. At this point a 4th order stream

Hydrology not addressed

- Deals with overland flows (inadequately) not underground flows
- Unique climate of the tops has not been considered
- The contribution of high rainfall, long periods of low cloud, mist and snow on the hydrology has not been considered
- Risk to hydrological regime, freshwater ecosystems and downstream flows not addressed
- Underground water keeps streams flowing when the rain stops
- Contribution of springs, swamps and bogs not considered

Hydrology not addressed

- The "big sponge" effect on downstream reliability and flows not considered
- Reliability of flows in the Upper Peel River, Chaffey Dam and Tamworth City Water supply not addressed
- Headwater regions generate up to 80% of runoff in Murray Darling Basin
- The impact of clearing, concrete surfaces, hardstands and roads on absorption and underground flows not considered
- Groundwater resources must be considered to assess the risk profile of the development.
- The reliability of flows in the Upper Peel River, Chaffey Dam and Tamworth City water supply have not been considered

Hydrology not addressed

- Multiple environmental changes in the headwaters of three major river systems to the wider region not been considered
- Geotechnical data insufficient to understand hydrological regime of the mountain
- Threats to freshwater ecosystems and water supply to the region not addressed
- Multiple changes in the headwaters of 3 major river systems not considered
- The Precautionary Principle must be applied

Runoff and Erosion

- CSIRO research shows climate change will increase rainfall intensity and erosion
- 1st order streams carry high flows of extreme velocity
- Slopes encountered limit the available space for discharge points, including grass swales and spreaders
- Appendix L – Constructibility notes careful design of erosion and sediment control measures require careful design
- These designs must be completed prior to approval of the Project

Flood debris in 2nd order stream after January 2, 2010, flood on internal farm track following 40 minutes of rain which dropped 74mm at 850m This location is 1050m with a fall of 300m in 2000m. Judging by the erosion at 1250m with a fall of 100m in 1000m the rainfall at the top of the stream would have been considerably more than 74mm

Runoff and Erosion

- Areas with the disturbance required for wind farm construction are at increased risk instability and erosion
- High rainfall and steep slopes can produce very destructive erosion and create large quantities of debris
- The culvert for transverse track on the north arm of Talbots Creek is on a 1st order stream which falls 245m in 470m.
- In a rainfall event of 50mm rain 1 hour this culvert will have to deal with approximately 5 megalitres in an hour.

Erosion and flood debris after January 2, 2010, flood in 2nd order stream before joining Brayshaws Creek. At this point the creek drops 300 metres in 2,000 metres. Judging by the erosion at 1250m with a fall of 100m in 1000m the rainfall at the top of the stream would have been considerably more than 74mm

Mass Movement

- Liverpool Range has a long history of mass movement
- A study of the landscape shows that the terrain was shaped by mass movement of major landslips
- The transverse track is located on shelves that were created by mass movement between steep slopes and crosses deeply incised gulleys
- Erosion and mass movement potential increased by disturbance required for infrastructure development and construction
- Increasing rainfall events already contribute to erosion and flood debris

Flood debris on Shearers Road Stockyard Creek culvert after January 2, 2010 flood
Stockyard Creek is a 3rd order stream

Concrete Cancer not considered

- Low pH in the project footprint is not considered
- Not evident from desktop analysis the EIS is based on
- Ridge rises in acidity from the Hanging Rock end
- Soil test conducted on "Nycooma" in the 1980s recorded pH levels less than 4
- Bottom fence wires closer to the ground than 75mm rot away within 5-10 years
- Steel fence posts rot off at ground level
- Risk of concrete cancer in these conditions pose a significant risk to the stability of WTGs

Conclusion

- EIS, Amendments and Reviews based on desk top analysis
- Site specific information and designs required to enable adequate risk assessment
- Available information not sufficiently robust to enable a realistic application of the Precautionary Principle
- The impact on the Peel River flows and Murray Darling Basin is not considered
- The sources of stream and river flows are unmovable
- There are less environmentally sensitive locations for the development of renewable energy projects
- The Hills of Gold Wind Farm location in unsuitable for a wind farm development
- The location is best suited for its potential contribution to the environment
- Most attempts at grazing in the project footprint since the 1900s have been unsuccessful