

**IN THE MATTER** of the Resource Management Act 1991

**AND**

**IN THE MATTER** of a submission in respect of the **PROPOSED WAIKATO DISTRICT PLAN** by **AMBURY PROPERTIES LIMITED** pursuant to Clause 6 of Schedule 1 of the Act seeking the rezoning of land at Ohinewai

### **SUMMARY STATEMENT OF CAMERON JOHN LINES**

1. My full name is Cameron John Lines. I am a Principal and Director of Baseline Geotechnical Limited a company I founded in July 2018 which provides mine/quarry development and geotechnical advice to the extractives sector. I prepared a statement of evidence dated 9 July 2020 and a statement of rebuttal evidence dated 24 August 2020. The purpose of this document is to summarise those statements.
2. I outlined my qualifications, experience and commitment to comply with the Environment Court Expert Witness code of Conduct in my evidence in chief ("EIC").
3. The Site is underlain by a thick sequence of poorly consolidated clays, silts and sands of the Tauranga Group, overlying Te Kuiti Group siltstones and sandstones which include a thick sub-bituminous coal seam at depth.
4. The coal resource underlying the Site has been known about for many years and was the subject of a State Coal ground investigation programme in the 1980's. However, a mine has never been developed to extract the coal.
5. Demand for sub-bituminous coal has fallen over recent years due to the availability of low cost natural gas for local power stations, an increasing focus on renewable energy and concerns around carbon emissions.
6. Exploiting the coal resource at Ohinewai by traditional opencast or underground mines is expected to be technically challenging.
7. The key issues with an opencast pit include:
  - (a) Very flat slopes will be required to manage pit wall instability risks; potentially necessitating the removal of Lakes Ohinewai and Rotokawau.
  - (b) Groundwater inflows into the pit present a risk of hydraulic connection to Lake Waikare and could result in widespread settlement due to dewatering of the Tauranga Group.

- (c) A very large area must be set aside for initial overburden placement on foundation soils (Tauranga Group) that are typically unable to accommodate large vertical loads.
8. The key issues with an underground mine include:
- (a) The high cost of access shafts.
  - (b) Keeping shafts and drives from converging/collapsing.
  - (c) Longwall miners are not expected to be well suited to the ground conditions, reducing resource recovery.
  - (d) Managing the effects of surface settlement, which will influence the volume of coal that may be recovered.
  - (e) Managing groundwater inflows.
  - (f) High capital start-up costs and ongoing high operational costs set against anticipated low production rates is expected to result in an uneconomic mine.
9. It is my opinion that mining the Ohinewai resource by conventional opencast or underground mining methods is unlikely to be economic due to the technical challenges, potentially significant environmental impacts, low demand and high operational costs.
10. Developing techniques to access and utilize deep or difficult to mine coal seams include Underground Coal Gasification (UCG). Injection wells are drilled from surface into an underlying coal seam, and either air or oxygen is injected into the seam along with water, which ignites the coal, and the resultant gas is tapped through production wells.
11. Solid Energy New Zealand trialled UCG in 2012 but no data is publicly available that demonstrates the surface settlements that occurred.
12. Significant surface settlements could occur if UCG were used within the thick (10-20 m) sections of the resource, unless a substantial volume of coal remains unburnt in the ground. Settlement would effect surface water bodies and drainage systems as well as structures at the ground surface.
13. UCG may not be incompatible with the proposed development of the site depending on the separation between injection and production wells and assuming environmental effects (settlement in particular) can be managed.
14. I have reviewed the evidence prepared by Dean Ferguson and Gary Gray on behalf of the Ralph Estate.
15. Overall, Mr Fergusson and I are in agreement in respect of most issues concerning the mine development matters addressed in our evidence, despite differences in the mining proposals considered. There are, however, some key areas where we disagree, which means we draw different conclusions around the overall feasibility of developing a mine at Ohinewai. In my opinion the key areas of disagreement relate to three issues.

#### **Future demand for coal in the North Waikato**

16. Mr Fergusson holds a more optimistic view of coal demand than I do, based on projected long-term demand from Glenbrook Steel Mill. I consider that there is a high level of uncertainty in demand from this source.

### **The technical feasibility of an opencast**

17. Mr Fergusson indicates that assessment of environmental effects is outside the scope of his expertise. However, this means he takes a relatively narrow view of the technical feasibility of developing an opencast mine at the site.
18. It is my view that the dewatering required to achieve acceptable levels of pit slope stability could have pronounced environmental effects and that these must be considered as part of the overall technical feasibility of an opencast mine at Ohinewai. The rebuttal evidence of Mr Stafford and Mr Speight address these effects in more detail.

### **The extent of the proposed offset zone and impacts on coal sterilization**

19. The basis of a proposed offset from Tahuna Rd as defined by Mr Fergusons constrained pit has not been provided. The volume of potentially sterilised coal quoted using this constrained pit may therefore be overstated.

**Cameron John Lines**  
**9 September 2020**