

**IN THE MATTER OF
THE HAZELWOOD MINE FIRE INQUIRY**

STATEMENT OF DR FRIEDRICH VON BISMARCK

I, Dr. Friedrich von Bismarck of Karl-Liebknecht-Straße 33, 10178 Berlin, Germany, say as follows:

Professional Background

1. I have headed the Joint-Governmental Agency for Coal Mine Rehabilitation in Berlin for more than 20 years. Here the financial, administrative and legal aspects of the mine rehabilitation program with the value of over 10 Billion Euros are taken care of. It is a service agency acting in the name of the German Federal Government as well as in the name of the governments of the East-German provincial states where brown coal was mined.
2. My academic background is economist and geologist and I have 35 years of international professional experience of mining and its environmental impact.

Experience in large-scale lignite mine rehabilitation

3. I have prepared a PowerPoint presentation for the Board of the Hazelwood Mine Fire Inquiry (**Attachment 1**). The presentation is about the experience we have made in East Germany with the large scale lignite mine rehabilitation program (**slide 1**). The situation of the open pit lignite mining in Germany could in many ways be of interest in the discussions to the situation in the Latrobe Valley.
4. Lignite is mined in East-Germany in the Lusatian coal district and the Central German coal district (**slide 2**). The mines are located about 120 - 180 km away from the capital city of Berlin.
5. Currently the annual lignite production in the Lusatia mining district of Germany is about 62 million tons per year (**slide 3** -animated). The coal is produced from four large scale open pit mines and delivered directly by band-conveyor and trains to three power plants. The coal has a moisture content of around 55 %. The geological difference to the situation in the Latrobe Valley is that the coal seams in Germany are much thinner and are covered with more overburden.
6. The mines are located in populated areas - some communities are directly adjacent to the mines (**slide 4**) – with farmland and forestry surrounding them.
7. In about 20 years from now the planned time of coal production from the three mines in the Latrobe Valley will come to an end and rehabilitation will be the main focus. In this context some of the German experience might be of specific interest to the situation in Victoria.
8. 25 years ago, East-Germany (GDR) was with 300 million tons per year, the largest producer of lignite coal in the World. In the early 1990s, about 80% of the industry had to close down because the mines and plants became un-economic or could not meet the rising environmental standards. At the beginning of the 1990s a unique program started in East-Germany for the

rehabilitation of the closed down coal industry covering an area of over 100'000 hectares of mine land, a total of 224 voids (**slide 5**), and 100 industrial sites including power-plants, processing-plants and cookeries and many partly toxic industrial waste dumps.

9. Because of the specific situation with the reunification in Germany the government had to take up responsibility for the rehabilitation that would normally be the legal obligation of the operator or mining company.
10. During the last 150 years, mining has had a major impact on the landscape of Lusatia (**slide 6**). The production in the first coal mines – initially –underground mines - started from 1875. The map shows the pre-mining phase in Lusatia. Particularly in the 70th and 80th of last century the mining increased intensively as GDR's-socialistic economy depended heavily on the lignite coal as the sole source of energy.
11. Today after 25 years of an intensive rehabilitation program a major change in the landscape and the regional development has been achieved. The landscape shows now a balanced mix of communities, and infrastructure with agriculture, forestry and lakes that had previously been voids.
12. The development can be shown with 'before' and 'after' pictures (**slide 7**- animated and **slide 8**). The only point for orientation is an old villa near the city of Bitterfeld. Once the area was known as 'the dirtiest' place of Germany, now it is attractive for investors and is benefiting from tourism.
13. The rehabilitation works create chances like the former mining areas provide opportunities for new value-added chains e.g. in agriculture, (**slide 9** and **10**). At the Lake-Geiseltal - a former mine void and the largest manmade lake in Germany - new forms of agriculture like growing wine become possible by using the dipping dump slopes to collect more sun for the plants.
14. The flooded voids offer now also new opportunities for different fishing activities (**slide 11** - animated).
15. Some of the former industrial sites were successful in attracting new industrial investments like a paper mill (**slide 12** - animated) and the production of rotor blades for wind-power-generators.
16. The work plan for mine closure demanded a hydrological link between adjacent mine voids. There was the idea to enlarge the canals to allow ships to pass through (**slide 13**). The provincial Governments, keen to support regional development, allocated the required funds. Now a lot of different forms of water-sports are made possible supporting tourism in the former mining region.
17. The new lakes are attracting private investors e.g. in the field of gastronomy and hotels (**slide 14**). A hotel, called 'The Lighthouse', was for example opened up last year in an area where there has never been a lake before.
18. Another idea to enhance the attractiveness of the new lakes are floating homes that are manufactured locally (**slide 15**).
19. The new post mining landscape with the voids had played in Germany an important role in the regional flood water prevention. During the last 14 years the negative effects of several storm-water and high-flood events could be reduced as the mining lakes could take large quantities of water from the river system saving communities downstream from the water masses (**slide 16** - animated). At the 'White Magpie' river a new flood-protection-structure helped in June 2013

capping the floodwaters and thus avoiding potential financial damage on inundated buildings in the downstream city of Leipzig in the order of 50 million Euros.

20. Regional population has, on one side, benefited from the job opportunities of the mining activities but for most of the people the mines were 'off limits' for decades. After the active coal mining comes to an end, the public will take 'possession' again of the post mining land as this is going to be part of their home landscape. They will have to build up identification with the new post mining landscape. In Lusatia several projects were carried out to integrate the interested people into the rehabilitation process (**slide 17**). So many regional choirs formed a united choir of the post mining landscapes with about 500 singers singing jointly their own new anthem. Or over 4500 regional people became part of a light performance (**slide 18**) – everyone bringing his private torch-light – to welcome the creation of a new mining lake.
21. Now a majority of the regional population is seeing the result of the rehabilitation process as a very positive development.
22. But besides many successes in the process of rehabilitation some draw-backs in the field of geo-technical stability and water quality had to be witnessed too indicating some remaining risks with the rehabilitation works.
23. Our applied standard technology to stabilise the pit walls and dump slopes has not been questioned but in the last years some ground breaks on dump surfaces happened in areas that previously had been deemed stable (**slide 19**).
24. Another draw-back was a rising content of iron-hydroxide in the groundwater – although generally expected – occurred earlier and more intensely than the hydro-geological model calculations had predicted (**slide 20**) and is entering the river system in some areas.
25. The German governmental rehabilitation program is now running since 1991. In 1992, a study calculated the costs of the operator's obligations from the work plans for all mines to be closed and came up with a figure of 16 billion Euros (**slide 21**). Meanwhile the German federal government together with the governments of four affected provincial states have allocated – always within a framework of joint governmental financial treaties – about 10 billion Euros.
26. The program is now in its final phase and today it is clear that less expenditure will be required for completion and the initial planned amount will never be reached.
27. The individual cost parameters of the rehabilitation works changed of course over the years. So e.g. the costs for mass movements with bulldozers stayed since the year 1999 between 0.5 to 0.81 Euros per m³ (**slide 22**) and the cost for the creation of forest areas stayed during the same period between 3,200 and 5,100 Euros per hectare (**slide 23**). The costs of the rehabilitation program showed a development comparable to the cost developments in the other industries.
28. Mining is typical for a very steady long-term business. In Germany we have witnessed that the future prospects of the active coal mining industry in Germany have changed over the last 30 years. So in GDR times one could not imagine that the excessive coal production would be drastically reduced - but it just so happened after reunification. And 10 years ago, no one would have realistically foreseen the development of the rising share of the renewable energy, like wind power (**slide 24**) and photo-voltaic (**slide 25**) power generation. Changing prospects of coal mining were in Germany largely affected by governmental decisions. (It was decided, after the Fukushima accident in 2011, to phase out nuclear power plants and subsidize heavily the generation of renewable energy).

29. Finally I will sum up some points of our experience in Germany that might be of interest to the discussions in the Hazelwood Mine Fire Inquiry (**slide 26**).
- a. The situation of the open pit lignite mining in Germany is in many ways comparable to the situation in the Latrobe Valley.
 - b. It was possible to create with the mine rehabilitation work a major change in the landscape and the regional development.
 - c. The rehabilitation works create chances like the former mining areas provide opportunities for new value-added chains e.g. in agriculture, industry, renewable energies, tourism and real-estate.
 - d. The new post mining landscape with the flooded voids can play an important role in the regional flood prevention (**slide 27**).
 - e. In Germany we have experienced some remaining risks with the rehabilitation works in the field of geo-technical stability and water quality.
 - f. The mine rehabilitation cost stayed within the planned framework and showed over the last 20 years a development comparable to the cost development in the other industries.
 - g. The future prospects of the active coal mining industry have changed over the last 25 years and were in Germany largely affected by governmental decisions.
 - h. Regional population is building up identification with the new post mining landscape and seeing in it a very positive development.

Signature



Date

1. December 2015