Restriction of Publication of Part Claimed

Confidential information not highlighted in this version

IN THE AUSTRALIAN COMPETITION TRIBUNAL

of 2014

AGL Energy Limited

RE: PROPOSED ACQUISITION OF MACQUARIE GENERATION (A CORPORATION ESTABLISHED UNDER THE ENERGY SERVICES CORPORATIONS ACT 1995 (NSW))

Statement of: Glenn Schumacher
Address: 18 Marisa Crescent, Berwick, Victoria
Occupation: Chief Engineer
Date: 23 March 2014

Contents

Filed on behalf of (name & role of party) AGL Energy Limited, Applicant
Prepared by (name of person/lawyer)
Law firm (if applicable) Ashurst Australia
Tel 02 9258 6000 Fax 02 9258 6999
Email Liza.Carver@ashurst.com
Address for service (include state and postcode) Level 36, Grosvenor Place, 225 George Street, Sydney NSW 2000

Document number	Details	Paragraph	Page
8	Annexure "GS7", being a copy of the Independent Engineers Report prepared by Worley Parsons (on behalf of the New South Wales Government) for the Liddell plant	21	1047
9	Annexure "GS8", being a copy of a summary of the operation of coal fired electricity generation plants	22, 24	1418
10	Annexure "GS9", being a copy of the AGL presentation entitled "Strategy for High Ash Coals"	25, 26, 34, 35	1466
11	Annexure "GS10", being a copy of Macquarie Generation's "Boiler Plant Asset Management Strategy 2012/2013"	28	1505
12	Annexure "GS11", being a copy of a report from Wits University in South Africa	29	1601
13	Annexure "GS12", being a copy of a summary of reports from Wits University in South Africa and Vega Industries Ltd by Macquarie Generation entitled "PF Mills Strategy"	29	1649
14	Annexure "GS13", being a copy of the GHD "Screening and Crushing Options Concept Study"	30	1654
15	Annexure "GS14", being a copy of Macquarie Generation's "Boiler Plant Asset Management Strategy 2013/2014"	31	1677
16	Annexure "GS15", being a copy of Macquarie Generation's "Engineering Strategy 2013/2014"	40	1777
17	Annexure "GS16", being a copy of AGL's Risk Register for the Bayswater and Liddell plants	50	1792
18	Annexure "GS17", being a copy of a summary of the Risk Register	50	1801
19	Annexure "GS18", being a copy of a paper provided to the AGL Board of Directors for a meeting on 17 January 2014	51	1806
20	Annexure "GS19", being a copy of a presentation delivered to the AGL Board of Directors on 17 January 2014	51	1812
21	Annexure "GS20", being a copy of a presentation delivered to AGL's board of directors on 21 January 2014	55	1845

I, Glenn Schumacher, of 18 Marisa Crescent, Berwick, Victoria say on oath:

1. I am the Chief Engineer of the Merchant Operations business of AGL Energy Limited ("AGL").

2. I make this statement from my own knowledge, except where otherwise stated. Where I refer to facts on the basis of information provided to me I believe those facts to be true.

Qualifications and Experience

3. I have the following degrees:

   (a) Bachelor of Mechanical Engineering from the University of Technology, Sydney;

   (b) Master of Business Administration (Technology Management) from Deakin University;

   (c) Master of Engineering (Power Generation) from the University of Queensland; and

   (d) Doctor of Engineering (honoris causa) from Central Queensland University.

4. Between 1979 and 1999 I worked as a Mechanical Engineer for a range of businesses in the power, defence, cement and pulp and paper industries, primarily in technical and management roles. Details of these roles (and my other qualifications) are set out in my curriculum vitae (**GS1**).

5. Between 1999 and 2004 I was employed by International Power Hazelwood ("IPH") as a Production Manager for the Hazelwood power station, a 1,600 megawatt brown coal fired power station in Victoria. My responsibilities included increasing life expectancy of plant components, improving operational and plant repair procedures, developing fuel management strategies and providing specialist engineering advice to the IPH Engineering Team. In this role I led approximately 216 support and operations staff.

6. Between 2004 and 2007 I was employed by the Tarong Energy Corporation ("TEC") as Manager of Technical Services. At the time, TEC was owned by the Queensland Government and provided approximately one quarter of Queensland's electricity from a portfolio of coal and hydroelectric generation facilities. I was responsible for the provision of engineering and scientific services within the Operations Group, including developing and carrying out medium to long-term asset management strategies, managing development projects for plant mills, providing engineering advice and support and managing fuel supply issues.

7. One of the fuel supply issues that I managed was the transition to a new source of coal supply for the Tarong and Tarong North power stations. As I discuss further below, coal fired power stations are typically designed for coal with particular characteristics (such as ash and moisture content and "grindability"). The potential new sources of coal for Tarong and Tarong North had characteristics different to those for which the plants were designed. The transition therefore required the properties of the coal from each potential source to be analysed, and necessary plant modifications (particularly to the mills) to be identified, trialled and proven to be effective. I was responsible for managing this process. I have also written a number of peer-reviewed articles, book chapters and conference papers on related (coal utilisation) issues, which are referred to in **GS1**.

8. Between 2007 and 2013 I was employed by NRG Gladstone Operating Services Pty Ltd ("NRG") as General Manager of Operations, leading the company's 300 employees. I was recruited to the company to turn around what had become a significant decline in the performance of Gladstone Power Station (Queensland's largest coal-fired power station). Among other things, I introduced a "whole of life" asset management plan, which involved operating, maintaining and investing in the station by reference to its long term target performance (as opposed to short–medium term goals). This strategy proved very successful and, in 2012, NRG received an Engineering Excellence Award for Engineering Achievement in recognition of the turnaround in the plant's performance. This is the highest award for engineering achievements (in any field or industry) conferred by Engineering Australia, the largest professional body for engineers in Australia. I discuss the Gladstone station and "whole of life" asset management plans further below.

9. I joined AGL in November 2013 as Chief Engineer of Merchant Operations. Merchant Operations is the business responsible for managing AGL's power generation assets. As Chief Engineer I have senior management responsibility for engineering and technical issues for AGL's power generation assets, including developing engineering and technical capability for AGL.

AGL's due diligence process for its proposed acquisition of assets of Macquarie Generation

10. When I joined AGL it had been selected as a bidder for assets of Macquarie Generation, including the black-coal fired baseload generation Bayswater power

station ("Bayswater") and the black-coal fired baseload and shoulder generation Liddell power station ("Liddell").

11. AGL had commenced a due diligence process in respect of Bayswater and Liddell and established a series of "work streams" for different aspects of the due diligence. I was appointed to the "technical due diligence" work stream, which was responsible for assessing the value of Bayswater and Liddell by reference to matters such as their current condition, likely future condition, age and design, as well as their historical, current and projected performance and the type of fuel that they used.

12. The work streams and reporting lines for the due diligence process are set out in **GS2**. The technical due diligence work stream reported to a Project Director (Nigel Bean), who reported to a Steering Committee that comprised senior AGL executives, including its Managing Director and Chief Executive Officer and Chief Financial Officer. The Steering Committee reported to AGL's board of directors.

13. I was part of a team that was led by the Manager of Asset Strategy for Merchant Operations, David Bartolo ("Technical DD Team"). David was responsible for co-ordinating and supervising the team. I was effectively second in charge to David, and had responsibility for general oversight of the technical due diligence process, as well as managing and assisting with the detailed technical analysis performed by the team.

14. The team members all had substantial knowledge of and experience with issues relevant to the technical due diligence process. This included boiler and mill componentry, metallurgy, water chemistry and turbines and generators. The team comprised the Chief Operating Officer of Merchant Energy, the Station Performance Manager of AGL's Loy Yang A plant in Victoria, AGL's Manager of Strategy, Risk and Governance and 15 other technical specialists from the Office of the Chief Engineer and the Asset Strategy and Performance and other teams.

15. Each member of the Technical DD Team was allocated to one or more of 12 "sub-teams", with each sub-team having responsibility a particular aspect of the technical due diligence. In addition to having responsibility for general oversight of the technical due diligence process, I was a member of the sub-teams responsible for coal and ash handling and water treatment.

16. Evans & Peck Pty Ltd ("E&P") was also engaged to assist the team. E&P is a specialist engineering consultancy firm with expertise in the assessment of current

and future performance of electricity generation plants. E&P ultimately prepared its own report on Bayswater and Liddell (**GS3**) but worked closely with the Technical DD Team throughout the due diligence process and assisted in the formulation of the team's conclusions and recommendations.

Process followed by the Technical DD Team

17. The Technical DD Team's task was to:

    (a) identify and understand key technical issues;

    (b) isolate and further investigate "material" issues that could affect AGL's valuation of the sites (with "material" defined as issues that may affect AGL's balance sheet by more than $50 million or its profit by more than $15 million, or that may amount to a one off reportable error of more than $5 million); and

    (c) formulate appropriate risk based strategies to address the material issues and ensure that these strategies were reflected in inputs to the valuation model that AGL was preparing in respect of Bayswater and Liddell. (These instructions are set out on p. 3 of the team's Internal Due Diligence Report (**GS4**), which I discuss below).

18. In approaching this task, we had regard to AGL's "missions" for Bayswater and Liddell. These missions were summarised to the team as follows:

    (a) "Liddell: Manage issues to 2022 without stranding capital, low capacity factor, able to tolerate high forced outage. Operation must be safe.

    (b) Bayswater: Optimise Bayswater risks and production plans to cost effectively meet market needs through to 2035. High availability & reliability, and high capacity factor required. Operation must be safe" (see **GS4**, p. 3).

19. We also had regard to AGL's average Equivalent Availability Factor ("EAF") targets for Bayswater and Liddell (which are slightly more conservative than the missions). EAF refers to the energy production of the plant as a percentage of the theoretical total energy production of the plant if operated continuously at full output, over a given time period. The target average EAF for Bayswater is [redacted] (until its planned closure in 2035) and the target average EAF for Liddell is approximately [redacted] (until its planned closure in 2022). This means that AGL aims for Bayswater

and Liddell to achieve on average [redacted] and [redacted] of theoretical full output (respectively), until their planned closure dates.

20. [redacted]

21. The primary information that the Technical DD Team relied on in making its assessment of Bayswater and Liddell was:

(a) "Independent Engineers Reports" prepared by Worley Parsons (on behalf of the New South Wales Government) for each of Bayswater and Liddell (**GS6** and **GS7**);

(b) information in a "virtual data room" established by Macquarie Generation, including materials such as outage and failure reports;

(c) information obtained during a briefing from Macquarie Generation management on 2 December 2013, visit of the plants on 3 and 4 December 2013 and a meeting with Macquarie Generation and Worley-Parsons on 17 December 2013; and

(d) information provided from Macquarie Generation in a "Q&A" process in which AGL was able to submit written questions and requests for further information.

Issues identified by the Technical DD Team

22. In **GS8** I provide a high level overview of how coal fired electricity generation plants such as Bayswater and Liddell operate. Essentially, they grind coal (in mills), burn the ground coal (in furnaces), use the resulting energy to heat water and create steam (in boilers) and use the steam to drive one or more turbines, which in turn drive a generator (see, in particular, pp. 7 and 10 – 24 of **GS8**).

23. [redacted]

[redacted]

24. [redacted] Normally, coal particles (and other mineral matter excavated with coal) are introduced into the milling system in sizes of 50 to 75 mm, then ground by steel or cast iron balls to approximately 75 microns (ie., 75 millionths of a metre) before being blown by hot air through delivery pipes into the boiler furnace (**GS8**, p. 13). [redacted]

25. [redacted] As noted above, coal fired electricity generation plants are typically designed for coal with a certain "specification range" in relation to ash content and other matters. [redacted]

26. [redacted]

[redacted]

27. [redacted]

28. Our conclusions are supported by materials that we obtained during the due diligence process. [redacted]

29. In the course of the due diligence process the Technical DD Team learned that [redacted]

[redacted]

30. [redacted]

31. [redacted]

32. [redacted]

33. [redacted]

[redacted]

34. [redacted]

35. [redacted]

36. [redacted]

37. [redacted]

"Whole of life" asset management

38. [redacted] As I indicated above, whole of life asset management involves making operational, investment and maintenance decisions based on the desired long term performance of a plant (usually, over the plant's anticipated useful life). It includes, in particular, anticipating necessary investments so that they can be made at the most cost-effective time. Other management strategies, by contrast, are usually limited to making investments that are necessary to achieve shorter-term performance goals.

39. I consider whole of life asset management to be the most efficient and effective form of managing electricity generation assets. Among other things, it helps ensure that potential issues (in particular long term issues) are identified at the earliest possible stage, and can be addressed before they become significantly more expensive or have a significant adverse effect on plant performance. In my view it is also becoming increasingly accepted (globally) as the most efficient and effective method of managing major physical assets and infrastructure. By way of example, following the successful turnaround in the performance of Gladstone Power Station, there have been regular delegations from plants in Europe, Japan, Indonesia and Vietnam that seek to learn from the asset management approach that I implemented at Gladstone.

40. [redacted]

Investment required to achieve performance targets

41. [redacted] the Technical DD Team concluded that if AGL acquires Bayswater and Liddell, it will have to invest considerably more

than Macquarie Generation's planned expenditure on the plants in order to meet AGL's performance targets. At Bayswater, we concluded that an additional $304 million should be invested, which includes the modifications to the milling system I discussed above as well as investment in the plant's turbines, cooling towers, air heaters and ducts and a range of other plant components. For Liddell, we concluded that an additional $41 million should be invested. The following tables summarise the difference in AGL's and Macquarie Generation's planned expenditure at both plants.

[redacted]

[redacted]

42. [redacted]

[redacted]

43. [redacted]

[redacted]

44. [redacted]

45. [redacted]

[redacted]

46. [redacted]

Technical Due Diligence Report

47. The Technical DD Team summarised its findings and recommendations in a document entitled Project Hunter Due Diligence Report that was prepared for the Steering Committee (**GS4**). The report sets out the team's conclusions regarding the current condition of the Bayswater and Liddell assets, material issues and risks in relation to those assets and appropriate strategies to address the issues identified. It concludes (at p. 2):

> "[t]he technical due diligence team have reviewed the condition of these assets in light of their proposed missions. With correct capital expenditure, and AGL MO Asset Management Systems in place, these Power Stations are capable of achieving their missions within acceptable AGL operating risk parameters. An incremental cost of $345m to the MacGen Case is required to achieve this outcome." (The "MacGen Case" is Macquarie Generation's budgeted capital and maintenance expenditure for Bayswater and Liddell.)

48. [redacted]

[redacted]

49. [redacted]

[redacted]

50. Appendix A to the report is a table setting out the team's conclusions regarding the key technical risks that AGL would face post-acquisition, and the investment required to most efficiently address those risks. This table is based on a Risk Register that the team prepared during the due diligence process (**GS16**). In **GS17** I provide a summary of the Risk Register and an explanation of the acronyms that it uses.

Presentation to AGL's board of directors on 17 January 2014

51. On 17 January 2014 Doug Jackson, David Bartolo and I gave a presentation to AGL's board of directors (by teleconference) on the Technical DD Team's conclusions and recommendations. I helped prepare a paper that was provided to the board prior to the meeting (**GS18**). During the meeting we referred to slides that I also helped prepare (**GS19**).

52. Among other things, the paper refers to:

(a) [redacted]

(b) [redacted]

(c) [redacted]

[redacted]

(d) [redacted]

53. The slides provided further details of the Technical DD Team's analysis. This includes analysis relating to:

(a) in respect of Bayswater, the reduction in mill reliability over the previous two years (slide 7), the areas of the plant where the proposed $304 million investment is to be made (slide 8), when the $304 million is to be spent (slide 9) and the historic and projected availability of the plant (slide 9); and

(b) in respect of Liddell, the historical performance of the plant (slide 13), the areas where the proposed $41 million investment it to be made (slide 14) and the difference between the views of Macquarie Generation and the Technical DD Team in respect of the investment required to meet target performance for the plant (slide 15).

Further presentation to AGL's board of directors on 21 January 2014

54. Following the presentation to the directors on 17 January 2014, Doug Jackson informed me that the directors sought further information about the technical due diligence process. I understood that the board had asked for further information about:

(a) the benefits of making the proposed $345 million investment in Bayswater and Liddell, and the value and impact of not doing so;

(b) information on options for coal supply to Bayswater and Liddell in the future; and

(c) further information on labour synergies potentially achievable.

55. Slides that I helped prepare for the meeting are **(GS20)**. [redacted]

[redacted] (slide 21, which contains the graph that I referred to in paragraphs 43 and 44 above).

Sworn by the deponent
at Melbourne
in Victoria
on 23 March 2014
Before me:

)
)
)
)
)

Signature of deponent

Signature of witness

ELEANOR LETITIA MORRISON
Ashurst Australia
181 William Street, Melbourne Vic. 3000
An Australian legal practitioner within the
meaning of the Legal Profession Act 2004

[This page is intentionally blank]