



# Report and recommendations of the Environmental Protection Authority



## Bluewaters Power Station Phases I and II - inquiry under section 46 of the *Environmental Protection Act 1986* to amend Ministerial Statement 685 and 724

Bluewaters Power 1 Pty Ltd and  
Bluewaters Power 2 Pty Ltd

Report 1607

OCTOBER 2017

ENVIRONMENTAL PROTECTION AUTHORITY  
REPORT AND RECOMMENDATIONS TO THE MINISTER FOR  
ENVIRONMENT

**BLUEWATERS POWER STATION PHASES I AND II – INQUIRY UNDER  
SECTION 46 OF THE *ENVIRONMENTAL PROTECTION ACT 1986* TO  
AMEND MINISTERIAL STATEMENT 685 AND 724**

The previous Minister for Environment requested that the Environmental Protection Authority (EPA) inquire into and report on the matter of changing the implementation conditions relating to the Bluewaters Power Station proposal, with particular attention to those relating to air emissions levels, monitoring and control.

The following is the EPA's Report and Recommendations (No. 1607) to the Minister pursuant to section 46(6) of the *Environmental Protection Act 1986* (EP Act).

Section 46(6) requires the EPA Report to include:

- a) a recommendation on whether or not the implementation conditions to which the inquiry relates, or any of them, should be changed; and
- b) any other recommendations that it thinks fit.

This Report also includes the EPA's advice to the Minister following its consideration of the matters regarding changes to the proposal under section 45C(2) of the EP Act.

**Background**

The Bluewaters Power Station Phase I and II proposals were to construct and operate a sub-critical coal-fired base-load power generating facility with a nominal generating capacity of 200 megawatts per phase, four kilometres north east of Collie.

The EPA assessed Phase I of the proposal at the level of Public Environmental Review (PER) and released its assessment report (Report 1160) in January 2005. The EPA assessed Phase II of the proposal at the level of PER and released its assessment report (Report 1177) in June 2005.

For both the Phase I and II assessments, the EPA identified the following key environmental factors relevant to the proposal:

- Greenhouse Gas Emissions;

- Atmospheric Emissions;
- Liquid and Solid Waste Disposal;
- Surface Water and Groundwater; and
- Noise.

In applying the EPA's *Statement of Environmental Principles, Factors and Objectives* (December 2016), these factors are now represented by:

- Air Quality;
- Hydrological Processes;
- Inland Waters Environmental Quality; and
- Social Surroundings.

### **Requested changes to conditions**

In February 2013, Bluewaters Power reported in its Compliance Assessment Report that routine emissions testing at Bluewaters Power Station Phase I and II showed annual chromium emission levels above those listed in Schedule 1 of Ministerial Statement (MS) 685 (Phase I) and MS 724 (Phase II).

In response, the DWER (formerly OEPA) issued a Notice of Non-compliance on 3 April 2013 and required the proponent to take actions to reduce chromium emissions from its operations and to conduct additional monitoring to verify the accuracy of air emissions from the power station's stacks.

On 27 May 2014, on advice of the DWER (formerly OEPA), the Minister for Environment requested that the EPA inquire into and report on the matter of changing the conditions and commitments relating to the Bluewaters Power Station Phase I and II proposals, with particular attention to those relating to air emissions levels, monitoring and control pursuant to section 46 of the EP Act.

The EPA considers that the relevant factors relating to this change to conditions are:

- Air Quality; and
- Social Surroundings.

### **Application of relevant EPA Policies and Guidelines**

In inquiring into the change to conditions, the EPA has given due consideration to relevant published EPA policies and guidelines, noting that a number of published policies and guidelines pertaining to this proposal were considered. The relevant guidelines for this assessment were Environmental Factor Guideline – *Air Quality* and Environmental Factor Guideline – *Social Surroundings*.

On 13 December 2016, the EPA released a new suite of environmental impact assessment policy and guidance documents. The Minister requested this inquiry on 27 May 2014, prior to the release of the new *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2016* and environmental impact assessment policy and guidance documents.

In its assessment, the EPA has considered and given due regard to, where relevant, its current and any applicable former environmental impact assessment policy and guidance documents.

## **Inquiry into the requested change to conditions**

The inquiry considered the currency of the EPA's last assessment for Phase I (Report 1160) and the issue of MS 685 (24 August 2005) as amended by MS 803 (27 August 2009), and the assessment for Phase II (Report 1177) and the issue of MS 724 (24 May 2006) as amended by MS 804 (27 August 2009) as these documents are instructive in determining the extent and nature of the inquiry under section 46 of the EP Act. The amendments approved in MS 803 and MS 804 were the removal of redundant commitments related to ocean discharge modelling and were not related to air emissions.

## **Amalgamation of Departments**

On 1 July 2017 the Office of the Environmental Protection Authority (OEPA), Department of Environment Regulation (DER) and Department of Water (DoW) amalgamated to become the Department of Water and Environmental Regulation (DWER). Where it is relevant to distinguish between departmental roles prior to the amalgamation, this report identifies departments as DWER (formerly OEPA) and DWER (formerly DER).

## **Inquiry findings**

In conducting this inquiry, the EPA reviewed information provided by the proponent, relevant decision-making authorities, and undertook its own enquiries.

## **Air Quality and Social Surroundings**

The EPA's objectives for the environmental factors Air Quality and Social Surroundings are to:

- to maintain air quality and minimise emissions so that environmental values are protected; and
- to protect social surroundings from significant harm.

### *Original Assessments (2005 and 2006)*

In the original assessments (Report 1160 and 1177), the EPA assessed the construction and operation of a sub-critical coal-fired base-load power generating facility for Phase I and II.

For the air quality aspect of the proposals the EPA recommended condition 7 'Stack Emissions and Ambient Air Quality Monitoring' of MS 685 and MS 724 to ensure ongoing management and monitoring of air emissions and the monitoring of ambient air quality. The Key Characteristics Table in Schedule 1 of MS 685 and MS 724 identified the emissions to be monitored, together with the respective annual emission loads.

Schedule 2 of MS 685 and MS 724 also included the proponent's Environmental Management Commitment 11.5, which was to develop and implement an operational Emissions Monitoring and Management Plan.

The annual emission loads listed in MS 685 and MS 724 were provided by the proponent during the original assessment of the Bluewaters Power Station Phase I and II proposals. It is unclear as to how the annual emission loads were derived by the original proponent, and the current proponent is unable to

provide clarification. It is also noted that 'chromium compounds' are listed in MS 685 and MS 724, rather than separate speciated chromium III and chromium VI. This is relevant since chromium VI has a lower threshold of toxicological concern and health criteria are based on chromium VI.

#### Compliance Assessment Reporting (2013)

A condition in both MS 685 and MS 724 requires the proponent to provide an annual Compliance Assessment Report which addresses the status of implementation of the proposal as defined in Schedule 1, evidence of compliance with the conditions and commitments and the performance of the environmental management plans and programs.

In February 2013, Bluewaters Power reported in its Compliance Assessment Report that routine emissions testing at Bluewaters Power Station Phase I and II had measured chromium concentrations in the stacks that equated to around 2000 kilograms per year (kg/y) when multiplied by the annual exhaust volume. This amount is well above that listed in Schedule 1 of MS 685 and MS 724.

In response, the DWER (formerly OEPA) required the proponent to take actions to reduce chromium emissions from its operations and to conduct additional monitoring to verify the accuracy of air emissions from the power station's stacks. The DWER (formerly OEPA) also issued a Notice of Non-compliance on 3 April 2013. In response to this Notice, Bluewaters provided an Air Quality Investigation report and a Chromium Emissions Action Plan (CEAP).

Actions identified in the CEAP which were subsequently implemented included maintenance of the fabric filter pollution control baghouse structure, replacement of damaged filter bags and the installation of additional filter bag capacity.

The Bluewaters Power Station is also licensed under Part V 'Environmental Regulation' of the EP Act (Licence number L8326/2008/5). The DWER (formerly DER) also initiated a full licence review of the Bluewaters Power Station site and other power stations in the Collie airshed.

The subsequent stack testing undertaken by the proponent continued to show inconsistent and widely variable results. Testing for metals in stack gasses involves measuring flow rates, and taking a sample of exhaust gas for laboratory analysis. The laboratory results are used to calculate metal concentrations which can then be multiplied by the exhaust volume to give an annual emission load. The amount of metal in the sample is extremely small and often close to the detection limit of the laboratory analysis and this can result in limited precision. There is also potential for errors to be introduced through a non-ideal sample plane location, and during sampling and equipment calibration. After reviewing details of the proponent's stack testing program, the DWER (formerly OEPA) was of the view that the inconsistent and widely variable results could not be relied upon to represent the actual emissions. The DWER (formerly OEPA) suspected that the location of the sampling plane was a major contributor to the inconsistent results.

### Section 46 Request (2014)

On 27 May 2014, the then Minister for Environment requested that the EPA inquire into and report on the matter of changing the conditions and commitments relating to the Bluewaters Power Station Phase I and II proposals, with particular attention to those relating to air emissions levels monitoring and control pursuant to section 46 of the EP Act. This request was advertised on the EPA website in the Chairman's determinations on 30 June 2014.

To supplement the monitoring data, the DWER (formerly OEPA) initially used a mass balance calculation to conservatively estimate the amount of chromium VI that would likely be emitted from Bluewaters Power Station Phase I and II proposals under two scenarios:

- when the pollution control equipment was operating to design performance; and
- when the pollution control equipment was under performing.

A well-performing pollution control system was estimated to limit emissions to approximately 30 kg/yr of total chromium, of which about ten percent (3 kg/yr) was conservatively estimated to be chromium VI. The scenario with reduced pollution control efficiency was set to four times this amount.

A similar approach was used to estimate emissions from the other power stations in the Collie airshed. These estimates were used in two modelling scenarios. One scenario assumed all the power stations operated with design pollution control efficiency, and the second with reduced pollution control efficiency in order to represent a worst case.

Using the worst case scenario (for all power stations) in the Collie airshed, the cumulative ground level concentrations (GLCs) of chromium were modelled. With chromium VI estimated at ten percent of total chromium, the prediction was that ambient GLCs of chromium VI were less than ten percent of the annual health criteria recommended by the Department of Health (DoH). However at this level, the EPA considered that further investigation was warranted to more accurately define the GLCs.

The DWER (formally DER) updated the Bluewaters licence requirements on 18 October 2014. The updated licence included a particular focus on the maintenance and operation of pollution control equipment inline with the manufacturer's specifications as well as monitoring being carried out in the correct location by personnel with National Association of Testing Authorities, Australia accreditation for the relevant methods of sampling and analysis.

The Part V licence required the proponent to carry out additional monitoring by 30 June 2015 and submit an Air Emissions Sampling Methodology Assessment Report (AESMAR) by 31 August 2015. The report was to include an assessment of the adequacy of stack and Continuous Emissions Monitoring System (CEMS) sampling locations. The licence also stated that if the report identified deficiencies in existing sampling locations then the proponent was required to provide a proposal for improvement and target timeframes.

The AESMAR was finalised and provided to the DWER (formerly DER) in August 2015. The report identified that the existing sampling locations were not consistent with Australian Standard AS4323.1 and that stratification occurred

under high particulate loads causing monitoring results to be inaccurate. The proponent also carried out testing of an alternative monitoring plane located in the main stack. The results showed that stratification did not occur at this location, and that relocating the sampling plane and upgrading the CEMS would enable accurate measurements of particulate emissions. Subsequent data could then be used to predict emission trends over time and better evaluate the pollution control system's performance.

In response to the results of the AESMAR, the proponent agreed to relocate the monitoring planes to a point high on the stacks. This was undertaken for Phase II in October 2015 and Phase I in April 2016. The relocations involved extensive works and had to be undertaken during plant shutdowns.

#### *Interim Implementation Conditions (2015)*

Once the monitoring planes were consistent with Australian standards, on the advice of the DWER (formerly OEPA), the Minister for Environment issued Interim Implementation Conditions (21 December 2015) which are available as Attachment 8 to MS 685 and MS 724 on the EPA website.

These conditions required the proponent to carry out monthly monitoring for total chromium, chromium III, and chromium VI at the stack and from the coal used as feedstock. Sampling for arsenic, cadmium, mercury, and particulates was also required to improve the understanding of emission variability. The interim conditions were imposed to ensure that sufficient metal emission monitoring was undertaken to provide a robust understanding of metal emissions to allow the EPA to review the maximum extent of a range of metals and finalise the section 46 inquiry with confidence.

A total of eight rounds of monthly monitoring was undertaken between May and December 2016 for Phase II, and seven rounds of monthly monitoring was undertaken between June and December 2016 for Phase I. The measurements from the new monitoring location are more consistent and less variable, and the DWER considers that they can now be relied upon to be representative of actual emissions.

The results showed that the average total chromium emitted from Phase I and Phase II combined was approximately 36 kg/yr, with a worst case of 100 kg/yr. The EPA notes that these results are consistent with the earlier values estimated through mass balance by the DWER (formerly OEPA). The laboratory analysis showed that chromium VI was actually about 1.5 percent of total chromium, which is less than the conservative value of ten percent originally estimated by the DWER (formerly OEPA). As such, the average amount of chromium VI emitted from both units combined was 0.56 kg/yr with a worst case of 1.5 kg/yr.

The average and worst case data from Bluewaters Power's monitoring was used as a surrogate to estimate stack emissions from the other power stations within the Collie airshed, noting that power stations are the main regional contributors to metals in the Collie airshed. These values were then used by the DWER to model the average and worst case scenarios and predict the cumulative GLCs in the Collie airshed. The results for each of the metals sampled are shown in Tables 1 and 2. The EPA notes that predicted

concentrations of chromium III, chromium VI, arsenic, cadmium and mercury are all low when compared to the relevant health criteria for both scenarios.

**Table 1 – Air dispersion modelling results based on the estimated average emission scenario for power stations in the Collie airshed**

Pollutant	Bluewaters emission load per phase (kg/yr)	Highest GLC ( $\mu\text{g}/\text{m}^3$ )	Ambient health criteria ( $\mu\text{g}/\text{m}^3$ )	Percent of health criterion
chromium III	18	0.00074 (24hr)	0.46 (24hr)	0.16 %
chromium VI	0.28	0.0000013 (annual)	0.00018 (annual)	0.71 %
arsenic	10.4	0.000048 (annual)	0.0027 (annual)	1.76 %
cadmium	4.56	0.000021 (annual)	0.009 (annual)	0.23 %
mercury	6.44	0.00003 (annual)	0.18 (annual)	0.02 %

**Table 2 – Air dispersion modelling results based on the estimated worst case emission scenario for power stations in the Collie airshed**

Pollutant	Bluewaters emission load per phase (kg/yr)	Highest GLC ( $\mu\text{g}/\text{m}^3$ )	Ambient health criteria ( $\mu\text{g}/\text{m}^3$ )	Percent of health criterion
chromium III	50	0.0021 (24hr)	0.46 (24 hr)	0.45 %
chromium VI	0.75	0.0000034 (annual)	0.00018 (annual)	1.91 %
arsenic	27.5	0.00013 (annual)	0.0027 (annual)	4.66 %
cadmium	22.5	0.00010 (annual)	0.009 (annual)	1.15 %
mercury	22.5	0.00010 (annual)	0.18 (annual)	0.06 %

The predicted GLCs and the ambient health criteria chosen were provided to the DoH, who confirmed that the ambient health criteria are appropriate. The DoH also advised that if the modelling has captured all sources within the Collie Airshed then the risk to public health is expected to be within the health guidelines.

The EPA also commissioned a peer review (DiMarco, 2017) to independently advise on the ambient health criteria and the risk the predicted GLCs of metals poses. The peer review concluded that:

*‘the chosen Ambient Air Quality Criteria are appropriate for the protection of human health from exposure to arsenic, cadmium, chromium III, chromium VI and mercury. The results of the risk characterisation for exposure to the ground level concentration modelled for arsenic, cadmium, chromium III, chromium VI and mercury indicate that there is no cause for concerns of adverse health effects from exposure to the 5 chemicals, with the margin of safety ranging between one and more than three orders of magnitude’.*

The EPA notes that the relocation of the monitoring planes has enabled accurate and reliable monitoring data to be provided.

The annual chromium emission loads (provided by the proponent during the original assessment) listed in MS 685 and MS 724 are different to those found during this inquiry. The EPA considers that the emission loads can be amended, as the monitored emissions for all metals including chromium, are well below human health criteria and represent a practical target for the power station.

The EPA considers that the monitoring, management and control of metal emissions is more appropriately regulated under Part V of the EP Act for the Bluewaters Power Station Phase I and II proposals. The EPA notes that the DWER supports minimising regulatory duplication by removal of conditions under Part IV of the EP Act where emissions can be more appropriately regulated under Part V of the EP Act.

While this report focusses specifically on chromium emissions and more generally on other metals, the EPA considers that all of the air pollutants (with the exception of greenhouse gas) listed in Schedule 1 of MS 685 and MS 724 can be appropriately regulated under Part V of the EP Act. However the EPA considers that these emissions should be regulated by the Ministerial Statements until a full suite of emissions limits are added to the licence under Part V of the EP Act.

The EPA considers that it is appropriate to update the emissions limits in Schedule 1 of MS 685 and MS 724 to be consistent with the monitoring results from the metal emission monitoring, required by the interim implementation conditions.

The EPA notes that the condition for greenhouse gas emissions should remain in MS 685 and MS 724 to ensure greenhouse gas emissions are minimised in accordance with its guideline on air quality.

The EPA recommends that condition 7 (Stack Emissions and Ambient Air Quality Monitoring) in both MS 685 and MS 724 be replaced to require the Stack Emission Management and Ambient Air Quality Monitoring Plan to be updated to reflect the current situation.

Further, the EPA notes that condition 1 (Implementation) in both MS 685 and MS 724 should be updated to use the EPA's contemporary wording and Environmental Management Commitment 11.5 in Schedule 2 of MS 685 and 724 can be deleted as it is now redundant.

### **Part V EP Act Regulation**

In conducting this inquiry, the EPA is aware that the DWER is responsible for the regulation of emissions under Part V 'Environmental Regulation' and Part VI 'Enforcement' of the EP Act.

During the inquiry to change the implementation conditions, the EPA considered the capacity and experience of the regulator to manage the factors, including:

- A. whether the regulator has established policies and guidelines to support its regulatory process related to the factor;

- B. whether the regulator has the technical skills and experience to manage the environmental impacts, particularly where non-standard technology is proposed or the type of proposal is not regularly considered by the regulator; and
- C. where the EPA considers that an opportunity for public comment is important, whether this is provided by the regulatory process.

*A. Regulator policies and guidelines*

The EPA acknowledges that emissions and discharges for prescribed premises are licensed under Part V of the EP Act. Bluewaters Power Station Phase I and II is a prescribed premises and subject to the Part V operating Licence L8326/2008/5.

The EPA notes that DWER has developed the following guidance statements in relation to its functions under Part V of the EP Act:

- Guidance Statement – Regulatory principles, EP Act, Part V: Effective and efficient Regulation, July 2015; and
- Guidance Statement – Setting Conditions, Division 3, Part V, EP Act.

The EPA considers that the works approval and licensing process under Part V of the EP Act can determine the likely significance of impacts and appropriate regulatory controls to mitigate or manage the emissions.

The EPA notes that licences and approvals issued have binding conditions that can ensure there is not an unacceptable risk of harm to public health or the environment.

Furthermore, the EPA recognises that section 62A of the EP Act defines the kinds of conditions that can be set in Part V works approvals and licences. The EPA considers that section 62A of the EP Act could adequately allow for acceptable management of emissions.

*B. Technical skills and experience to manage the environmental impacts*

With regard to technical skills and experience to manage the environmental impacts, the EPA notes that DWER's role includes protecting and maintaining air quality and as such provides strategic, technical and policy advice on air emissions.

*C. Public comment process*

The EPA notes that section 54(2)(b), 54(2a), 57(2)(b), and 57(2a) of the EP Act provides opportunity for the public to provide comment on applications for works approvals and licences.

In addition, section 102 of the EP Act allows for appeals against decisions on works approvals and licences and that appeal rights exist for third parties including members of the public on amendments made to works approvals and licences.

## **EPA conclusion and recommendations**

Section 45B of the EP Act provides that if a proposal is revised after implementation conditions have been agreed or decided under section 45 of the EP Act, each of the implementation conditions continues to apply in relation to the revised proposal subject to, relevantly, the implementation conditions being changed under section 46 of the EP Act.

Having enquired into the conditions, the EPA recommends:

1. It is appropriate to, under section 46 of the EP Act:
  - a. replace Condition 1 (Implementation) in a manner provided for in the attached recommended Statement in MS 685 and MS 724;
  - b. replace Condition 7 (Stack Emissions and Ambient Air Quality Monitoring) in a manner provided for in the attached recommended Statement in MS 685 and MS 724; and
  - c. delete Environmental Management Commitment 11.5 from Schedule 2 of MS 685 and MS 724.
2. That after complying with section 46(8) of the EP Act, the Minister issues a statement of decision to change the conditions of MS 685 and MS 724, in the manner provided for in the attached recommended Statement.

## **Other Advice**

### *Changes to the proposal*

The proponent has requested that the outcome of the Interim Implementation Condition monitoring program be applied to reviewing the stack emissions and air quality components in the Key Characteristics Table in Schedule 1 of MS 685 and MS 724.

The updating of annual emission loads to air in the Key Characteristics Table in Schedule 1 of MS 685 and MS 724 represents a change to the proposal.

Section 45C of the EP Act provides that the Minister may consent to changes to a proposal after a statement has been issued under section 45(5) of the EP Act, provided the Minister does not consider that the change might have a significant detrimental effect on the environment in addition to, or different from, the effect of the original proposal (section 45C(2) of the EP Act).

In assessing the proposed changes and determining whether they may be approved under section 45C of the EP Act, the EPA has considered the 'six aspects' in Attachment 1. The EPA recommends that the Minister may approve the changes or recommendations to the Key Proposal Characteristics in Schedule 1 of MS 685 and MS 724 under section 45C of the EP Act.

### *Collie Airshed*

The EPA acknowledges the high level of public interest in the impact of air emissions from coal-fired power plants and their potential impacts on human health.

This inquiry into air emissions from the Bluewaters Power Station has brought to the EPA's attention a lack of consistent standards and limits across all types of air emissions for all power stations in the Collie airshed.

Consistent with the EP Act principles of waste minimisation, intergenerational equity, and improved valuation, pricing and incentive mechanisms, it is reasonable for polluters in this industry to meet similar expectations for emissions limits, benchmarking, monitoring and reporting.

Further, community concerns about the health risks associated with these emissions should be addressed by an appropriate regional ambient monitoring program designed and undertaken in consultation with the community. Reporting should occur with a frequency and transparency sufficient to give those living in the airshed confidence that the cumulative impacts of emissions are being managed in accordance with expectations and contemporary standards for human health.

Contemporary, science-based standards already exist in other jurisdictions and their applicability to the Collie region should be assumed in the absence of local analysis to the contrary.

The EPA notes that the power stations in Collie vary greatly in age and adopted technology and historically this has resulted in inconsistent regulatory requirements. The EPA recognises the desirability of managing the cumulative impact of multiple sources within an airshed in a consistent manner in order to provide transparent information to the community on air quality and to drive continual improvement. The outcomes that the EPA seeks to achieve in the Collie area are:

- integrated airshed management across the Collie airshed;
- benchmarking of emission sources;
- best practice regulation of the airshed;
- continuous improvement in air quality; and
- transparent provision of information on air quality to the community.

The EPA notes that the development of an Environmental Protection Policy for the Collie airshed under Part III of the EP Act could be one potential way to achieve the above outcomes.

**EPA advice on the Six Aspect Test**

<p align="center"><b>Six Aspects (relevant to proposed changes)</b></p>	<p align="center"><b>Comment</b></p>
<p>1. Identification of the content of the original proposal.</p>	<p>Ministerial Statement (MS) 685, and MS 724, provide for the construction and operation of a sub-critical coal-fired base-load power generating facility with a nominal generating capacity of 200 megawatts per stack, four kilometres north east of Collie. The description of the proposal is specified in the key characteristics table of Schedule 1 in MS 685 and MS 724.</p>
<p>2. Identification of the content of the relevant change(s) and determine whether the change(s) involves a revision of the original proposal.</p>	<p>The change is to the description of the proposal, specifically to amend the description of emissions for chromium, chromium VI, arsenic, and cadmium to reflect the current operation of the plant and also place a limit on emission of these metals so they are discharged at levels that represent a low risk to human health.</p>
<p>3. Determination as to whether the original proposal has had or will have any detrimental effect on the environment and, if so, what.</p>	<p>The original proposal was deemed to be a significant proposal which required assessment, largely due to the emission of pollutants to air which would result in a reduction in air quality.</p> <p>The detrimental effect of the emission of pollutants to air were to be ameliorated through the imposition of implementation conditions which specify annual pollutant loads and implementation of a stack and ambient air quality monitoring plan.</p>

<p style="text-align: center;"><b>Six Aspects (relevant to proposed changes)</b></p>	<p style="text-align: center;"><b>Comment</b></p>
<p>4. Determination as to whether the change(s) to the original proposal might (in the Minister's opinion) have any detrimental effect on the environment and, if so, what.</p>	<p>The amendment to the description of the emission levels is unlikely to have any detrimental effect on the environment because those limits are within relevant human health criteria.</p> <p>Increasing the annual load of chromium, chromium VI, arsenic, and cadmium that may be emitted to air could result in a reduction in air quality.</p> <p>Decreasing the annual load of mercury that may be emitted to air could result in an improvement in air quality.</p>
<p>5. Determination as to whether the detrimental effect (if any) which the change(s) might have on the environment is additional to, or different from, the detrimental effect (if any) which the original proposal has had or will have.</p>	<p>As above for Aspect 4.</p>
<p>6. Determination as to whether any detrimental effect which the change(s) to the original proposal might have on the environment, which is additional to, or different from, any detrimental effect which the original proposal has had or will have is, in the circumstances, significant.</p>	<p>The results of modelling undertaken during 2017 predicted the amendment would result in ground concentrations of total chromium, chromium VI, arsenic, cadmium and mercury which are less than five percent of relevant health criteria.</p> <p>Therefore, any additional potential detrimental effect is not considered to be significant.</p>

RECOMMENDED ENVIRONMENTAL CONDITIONS

**STATEMENT TO AMEND CONDITIONS APPLYING TO A PROPOSAL  
(PURSUANT TO THE PROVISIONS OF SECTION 46 OF THE *ENVIRONMENTAL  
PROTECTION ACT 1986*)**

BLUEWATERS POWER STATION PHASE I  
SHIRE OF COLLIE

**Proposal:** The construction and operation of a sub-critical coal-fired base-load power generating facility with a nominal generating capacity of 200 megawatt adjacent to the Bluewaters Power I Power Station on a site located approximately four kilometres north-east of Collie, as documented in Schedule 1 of Statement 685.

**Proponent:** Bluewaters Power 1 Pty Ltd  
Australian Company Number 106 034 879

**Proponent Address:** Level 8, 225 St Georges Terrace  
PERTH WA 6000

**Assessment Number:** 2014

**Report of the Environmental Protection Authority:** 1607

**Previous Assessment Number:** 1487 and 1765

**Previous Report Number:** 1160 and 1331

**Preceding Statement Relating to this Proposal:** Statement 685 and 803

Pursuant to section 45 of the *Environmental Protection Act 1986*, as applied by s46(8), it has been agreed that the implementation conditions set out in Ministerial Statement No. 685, be changed as specified in this Statement.

**Condition 1 is replaced**

1-1 When implementing the proposal, the proponent shall not exceed the authorised extent of the proposal as defined in the key characteristics table in Schedule 1, unless amendments to the proposal and the authorised extent of the proposal have been approved under the EP Act.

## **Condition 7 is replaced**

7-1 Within 3 months of issue of this Statement, the proponent shall update the Stack Emission Management and Ambient Air Quality Monitoring Plan (30-0419 Bluewaters AQMP (Rev 11) February 2009) to the satisfaction of the CEO. The updates shall address:

- (1) Changes in operational practices and activities;
- (2) Monitoring procedures and practices at the relocated monitoring ports;
- (3) Procedures and schedule for periodic inspection of all elements of the pollution control equipment to ensure they are operating to manufacturer specifications;
- (4) Reporting and tracking metal emissions against average levels included in Schedule 1 of Ministerial Statement 685; and
- (5) Investigative and contingency actions for each of the air emission limits included in Schedule 1 of Ministerial Statement 685.

7-2 After receiving notice in writing from the CEO that the Stack Emission Management and Ambient Air Quality Monitoring Plan satisfies the requirements of condition 7-1, the proponent shall:

- (1) Implement the Stack Emission Management and Ambient Air Quality Monitoring Plan;
- (2) Make the Stack Emission Management and Ambient Air Quality Monitoring Plan publicly available; and
- (3) Continue to implement the Stack Emission Management and Ambient Air Quality Monitoring Plan until the CEO has confirmed by notice in writing that the plan is no longer required.

7-3 The proponent:

- (1) May review and revise the Stack Emission Management and Ambient Air Quality Monitoring Plan, or
- (2) Shall review and revise the Stack Emission Management and Ambient Air Quality Monitoring Plan as and when directed by the CEO; and
- (3) The Stack Emission Management and Ambient Air Quality Monitoring Plan revised through conditions 7-3(1) or 7-3(2) shall be subject to the same requirements of condition 7-2.

Environmental Management Commitment 11.5 of Schedule 2 is deleted.

\*“CEO” means the Chief Executive Officer of the Department of the Public Service which is responsible for the administration of section 48 of the Environmental Protection Act 1986, or his delegate.

Hon Stephen Dawson MLC  
**MINISTER FOR ENVIRONMENT**

## Attachment 9 to Ministerial Statement 685

### Change to Proposal

**Proposal:** Bluewaters Power Station – Shire of Collie

**Proponent:** Bluewaters Power 1 Pty Ltd

**Change:** Adjustment of annual pollutant loads emitted to air

**Key Characteristics Table:** This table replaces the Key Proposal Characteristics Table in Schedule 1 to Statement 685

Element	Description of approved proposal	Recommended changes
<b>General</b>		
Project Purpose:	To produce electricity to supply to the SWIS grid or direct to customers	To produce electricity to supply to the SWIS grid or direct to customers
Construction Period:	Approximately 30 months to commercial operation	Approximately 30 months to commercial operation
Project Life:	Approximately 30 years	Approximately 30 years
Power Plant Type:	Subcritical coal fired power station	Subcritical coal fired power station
Power Generating Capacity:	Up to 208 megawatts	Up to 217 megawatts
Plant Operation:	Base load operation 24 hours per day, 365 days per year	Base load operation 24 hours per day, 365 days per year
Shutdown Time:	Plant maintenance shutdowns may be scheduled annually	Plant maintenance shutdowns may be scheduled annually
Maximum Facility Footprint (area of power generating unit):	Approximately 5.25ha (actual 1.99ha)	Approximately 5.25ha (actual 1.99ha)
Maximum Total Area (total area of power station plant):	Approximately 15ha (actual 9.83ha)	Approximately 15ha (actual 9.83ha)

<b>Element</b>	<b>Description of approved proposal</b>	<b>Recommended changes</b>
Ancillary Infrastructure		
Includes roads, benching for safe foundations, plant assembly areas, car parks, conveyors and the emergency coal stockpile	Approximately 23.75ha	Approximately 23.75ha
Contingency coal stockpile	500,000 tonne capacity	500,000 tonne capacity
Water storage dams associated with the contingency coal stockpile	2	2
Construction Laydown Envelope	Approximately 18.7ha	Approximately 18.7ha
<b>Plant facilities</b>		
Stacks:	1	1
Height of Stack:	100m	100m
Diameter of Stack:	4.13m	4.13m
Cooling Towers:	1 set	1 set
Liquid Fuel Storage Tanks:	2 x 100,000 litres and 1 x 10,000 litres	2 x 100,000 litres and 1 x 10,000 litres
Boiler:	Balanced draft pulverised coal steam generator matched to steam turbine capacity	Balanced draft pulverised coal steam generator matched to steam turbine capacity
Steam Turbine:	Tandem compound reheat steam turbine with synchronous alternator – 200MW <sub>e</sub>	Tandem compound reheat steam turbine with synchronous alternator – 200MW <sub>e</sub>
Wastewater collection:	Package treatment plant	Package treatment plant
<b>Utilities</b>		
Water Supply:	3.25GL/yr sourced from mine dewatering at Ewington 1	3.25GL/yr sourced from mine dewatering at Ewington 1
Transmission Line Length:	100m up to 3km depending on interconnection point as required by Western Power	100m up to 3km depending on interconnection point as required by Western Power
<b>Emissions</b>		
Noise:	Less than 60dB(A) at 150m from the plant. Less than 29dB(A) at nearest residence in Collie	Less than 60dB(A) at 150m from the plant. Less than 29dB(A) at nearest residence in Collie
Flue Dust:	47mg/Nm <sup>3</sup> ; 9.4g/s; 237tpa	47mg/Nm <sup>3</sup> ; 9.4g/s; 237tpa
Nitrogen Oxides:	500mg/Nm <sup>3</sup> ; 112.1g/s; 2828tpa	500mg/Nm <sup>3</sup> ; 112.1g/s; 2828tpa
Greenhouse Gases:	1,562,000tpa CO <sub>2</sub> e	1,562,000tpa CO <sub>2</sub> e

Element	Description of approved proposal	Recommended changes	
Carbon Monoxide:	500mg/m <sup>3</sup> ; 97g/s; 2444tpa	500mg/m <sup>3</sup> ; 97g/s; 2444tpa	
Volatile Organic Compounds:	33.3kg/yr	33.3kg/yr	
PAHs:	6.2kg/yr	6.2kg/yr	
		<b>Average levels**</b>	<b>Limit</b>
Arsenic:	6.8kg/yr	<b>10.4kg/yr</b>	<b>27.5kg/yr</b>
Cadmium:	8.8kg/yr	<b>4.56kg/yr</b>	<b>22.5kg/yr</b>
<b>Total Chromium*:</b>	1.6kg/yr	<b>18kg/yr</b>	<b>50kg/yr</b>
<b>Chromium VI</b>	<b>Not Specified</b>	<b>0.28kg/yr</b>	<b>0.75kg/yr</b>
Mercury:	32.2kg/yr	<b>6.44kg/yr</b>	<b>22.5kg/yr</b>
Lead compounds:	32.2kg/yr	32.2kg/yr	
Fluorides:	17,680kg/yr	17,680kg/yr	
POPs inc. Dioxins and Furans:	Less than 0.5 grams per year	Less than 0.5 grams per year	
<b>Waste</b>			
Ash:	182,000tpa maximum disposed to the adjacent mines, Ewington I and Ewington II	182,000tpa maximum disposed to the adjacent mines, Ewington I and Ewington II	
Septage:	Packaged treatment plant	Packaged treatment plant	
Saline Water:	1.2GL/yr	1.2GL/yr	
<b>Workforce</b>			
Construction:	Approximately 150 personnel at the peak of construction	Approximately 150 personnel at the peak of construction	
Operations:	Up to 30 full time operations and maintenance personnel	Up to 30 full time operations and maintenance personnel	

#### Abbreviations

CO <sub>2</sub> e	carbon dioxide equivalents	kg/yr	kilograms per year	MW <sub>e</sub>	megawatts sent out
dB(A)	decibels A weighted	LHV	lower heating value	O <sub>2</sub>	oxygen
g/s	grams per second	m	metres	pa	per annum
GL/yr	gigalitres per year	mg/Nm <sup>3</sup>	milligrams per standard cubic metre (at 7% O <sub>2</sub> at STP)	PAHs	polycyclic aromatic hydrocarbons
HHV	higher heating value	mg/s	milligrams per second	POPs	persistent organic pollutants
inc.	including	Mtpa	million tonnes per annum	SWIS	South West Interconnected System
kg	kilograms	MW	megawatts	tpa	tonnes per annum
				%	percent

\*Previously described as Chromium compounds \*\*Based on the average result from 15 rounds of monitoring

Hon Stephen Dawson MLC  
**MINISTER FOR ENVIRONMENT**

RECOMMENDED ENVIRONMENTAL CONDITIONS

**STATEMENT TO AMEND CONDITIONS APPLYING TO A PROPOSAL  
(PURSUANT TO THE PROVISIONS OF SECTION 46 OF THE *ENVIRONMENTAL  
PROTECTION ACT 1986*)**

BLUEWATERS POWER STATION PHASE II  
SHIRE OF COLLIE

**Proposal:** The construction and operation of a sub-critical coal-fired base-load power generating facility with a nominal generating capacity of 200 megawatt adjacent to the Bluewaters Power I Power Station on a site located approximately four kilometres north-east of Collie, as documented in Schedule 1 of Statement 724.

**Proponent:** Bluewaters Power 2 Pty Ltd  
Australian Company Number 122 896 968

**Proponent Address:** Level 8, 225 St Georges Terrace  
PERTH WA 6000

**Assessment Number:** 2014

**Report of the Environmental Protection Authority:** 1607

**Previous Assessment Number:** 1525 and 1766

**Previous Report Number:** 1177 and 1332

**Preceding Statement Relating to this Proposal:** Statement 724 and 804

Pursuant to section 45 of the *Environmental Protection Act 1986*, as applied by s46(8), it has been agreed that the implementation conditions set out in Ministerial Statement No. 724, be changed as specified in this Statement.

**Condition 1 is replaced**

1-1 When implementing the proposal, the proponent shall not exceed the authorised extent of the proposal as defined in the key characteristics table in Schedule 1, unless amendments to the proposal and the authorised extent of the proposal have been approved under the EP Act.

## **Condition 7 is replaced**

7-1 Within 3 months of issue of this Statement, the proponent shall update the Stack Emission Management and Ambient Air Quality Monitoring Plan (30-0419 Bluewaters AQMP (Rev 11) February 2009) to the satisfaction of the CEO. The updates shall address:

- (1) Changes in operational practices and activities;
- (2) Monitoring procedures and practices at the relocated monitoring ports;
- (3) Procedures and schedule for periodic inspection of all elements of the pollution control equipment to ensure they are operating to manufacturer specifications;
- (4) Reporting and tracking metal emissions against average levels included in Schedule 1 of Ministerial Statement 724; and
- (5) Investigative and contingency actions for each of the air emission limits included in Schedule 1 of Ministerial Statement 724.

7-2 After receiving notice in writing from the CEO that the Stack Emission Management and Ambient Air Quality Monitoring Plan satisfies the requirements of condition 7-1, the proponent shall:

- (1) Implement the Stack Emission Management and Ambient Air Quality Monitoring Plan;
- (2) Make the Stack Emission Management and Ambient Air Quality Monitoring Plan publicly available; and
- (3) Continue to implement the Stack Emission Management and Ambient Air Quality Monitoring Plan until the CEO has confirmed by notice in writing that the plan is no longer required.

7-3 The proponent:

- (1) May review and revise the Stack Emission Management and Ambient Air Quality Monitoring Plan, or
- (2) Shall review and revise the Stack Emission Management and Ambient Air Quality Monitoring Plan as and when directed by the CEO; and
- (3) The Stack Emission Management and Ambient Air Quality Monitoring Plan revised through conditions 7-3(1) or 7-3(2) shall be subject to the same requirements of condition 7-2.

Environmental Management Commitment 11.5 of Schedule 2 is deleted.

\*“CEO” means the Chief Executive Officer of the Department of the Public Service which is responsible for the administration of section 48 of the Environmental Protection Act 1986, or his delegate.

Hon Stephen Dawson MLC  
**MINISTER FOR ENVIRONMENT**

## Attachment 9 to Ministerial Statement 724

### Change to Proposal

**Proposal:** Bluewaters Power Station – Phase II Shire of Collie

**Proponent:** Bluewaters Power 2 Pty Ltd

**Change:** Adjustment of annual pollutant loads emitted to air

**Key Characteristics Table:** This table replaces the Key Proposal Characteristics Table in Schedule 1 to Statement 724

Element	Description of approved proposal	Description of recommended changes
<b>General</b>		
Project Purpose:	To produce electricity to supply to the SWIS grid or direct to customers	To produce electricity to supply to the SWIS grid or direct to customers
Construction Period:	Approximately 30 months to commercial operation	Approximately 30 months to commercial operation
Project Life:	Approximately 30 years	Approximately 30 years
Power Plant Type:	Subcritical coal fired power station	Subcritical coal fired power station
Power Generating Capacity:	Up to 208 megawatts	Up to 212 megawatts
Plant Operation:	Base load operation 24 hours per day, 365 days per year	Base load operation 24 hours per day, 365 days per year
Shutdown Time:	Plant maintenance shutdowns may be scheduled annually	Plant maintenance shutdowns may be scheduled annually
Maximum Facility Footprint (area of power generating unit):	Approximately 5.3ha	Approximately 5.3ha
Maximum Total Area (total area of power station plant):	Approximately 15ha	Approximately 15ha
Ancillary Infrastructure	Approximately 23.75ha	Approximately 23.75ha
Construction Laydown Envelope	Approximately 18.7ha	Approximately 18.7ha
<b>Plant facilities</b>		
Stacks:	1	1
Height of Stack:	100m	100m
Diameter of Stack:	4.13m	4.13m
Cooling Towers:	1 set	1 set
Liquid Fuel Storage Tanks:	2 x 100,000 litres and 1 x 10,000 litres	2 x 100,000 litres and 1 x 10,000 litres

<b>Element</b>	<b>Description of approved proposal</b>	<b>Description of recommended changes</b>	
Boiler:	Balanced draft pulverised coal steam generator matched to steam turbine capacity	Balanced draft pulverised coal steam generator matched to steam turbine capacity	
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<b>Utilities</b>			
Water Supply:	3.25GL/yr sourced from mine dewatering at Ewington 1	3.25GL/yr sourced from mine dewatering at Ewington 1	
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<b>Emissions</b>			
Noise:	Less than 60dB(A) at 150m from the plant. Less than 29dB(A) at nearest residence in Collie	Less than 60dB(A) at 150m from the plant. Less than 29dB(A) at nearest residence in Collie	
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Nitrogen Oxides:	500mg/Nm <sup>3</sup> ; 112.1g/s; 2828tpa	500mg/Nm <sup>3</sup> ; 112.1g/s; 2828tpa	
Greenhouse Gases:	1,562,000tpa CO <sub>2</sub> e	1,562,000tpa CO <sub>2</sub> e	
Carbon Monoxide:	500mg/m <sup>3</sup> ; 97g/s; 2444tpa	500mg/m <sup>3</sup> ; 97g/s; 2444tpa	
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<b>Waste</b>			
Ash:	182,000tpa maximum disposed to the adjacent mines, Ewington I and Ewington II	182,000tpa maximum disposed to the adjacent mines, Ewington I and Ewington II	
Septage:	Packaged treatment plant	Packaged treatment plant	

Element	Description of approved proposal	Description of recommended changes
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<b>Workforce</b>		
Construction:	Approximately 150 personnel at the peak of construction	Approximately 150 personnel at the peak of construction
Operations:	Up to 30 full time operations and maintenance personnel	Up to 30 full time operations and maintenance personnel

**Abbreviations**

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HHV	higher heating value	Mtpa	million tonnes per annum	SWIS	South West Interconnected System
inc.	including	MW	megawatts	tpa	tonnes per annum
kg	kilograms	MW <sub>e</sub>	megawatts sent out	%	percent
kg/yr	kilograms per year				

\*Previously described as Chromium compounds

\*\*Based on the average result from 15 rounds of monitoring

Hon Stephen Dawson MLC  
**MINISTER FOR ENVIRONMENT**