14 Greenhouse gases

14.1 Project changes

The Project changes will not materially change energy consumption by or coal production from the Project. Thus there are no changes to the greenhouse gas assessment presented in the main EA (Chapter 15) and in EA Appendix M.

14.2 Response to submissions

14.2.1 Greenhouse gas assessment

Submissions

I-45, I-173

Issue

Submissions assert the EA does not adequately determine the Project's carbon pollution footprint, including from clearing, excavation, transporting materials and during electricity generation.

Response

The greenhouse assessment (EA Appendix M) estimated the annual and Scope 1 (direct), Scope 2 (from the consumption of electricity generated off-site) and Scope 3 (from upstream activities and the transport and combustion of the coal by customers) greenhouse gas emissions using the method described in the National Greenhouse Accounts Factors (DCCEE 2011). Emission calculations included the emissions from excavation (Scope 1); transport of materials to, and product from, the mine (Scope 3); and from electricity generation using coal from the Project (Scope 3). The assessment did not include greenhouse gas emissions from progressive clearing. However, these will be small compared with the total Scope 1 and 2 emissions. Over the life of the Project the rate of from progressive rehabilitation will exceed the rate of clearing, be so emissions from clearing will be balanced by carbon sequestration from new growth over a larger area.

14.2.2 Costs of greenhouse gas emissions

Submissions

G-19, I-43, I-94, I-108, I-178, I-179

Issue

Submissions comment that the climate change costs from the Project's greenhouse gas emissions had not been included in the benefit-cost analysis.

Response

Responses to comments about the adequacy of the benefit-cost analysis, including consideration of greenhouse gas emissions and climate change are provided in Section 19.2.2.

14.2.3 Contribution to climate change

Submissions

G-1, G-2, G-11, G-13, G-20, G-24, G-27, I-2, I-11, I–12, I-19, I-20, I-21, I-29, I-33, I-34, I-35, I-43, I-44, I-46, I-47, I-53, I-55, I-58, I-61, I-62, I-64, I-65, I-68, I-70, I-72, I-73, I-74, I-75, I-76, I-78, I-79, I-80, I-84, I-85, I-88, I-89, I-94, I-95, I-98, I-99, I-103, I-110, I-111, I-113, I-114, I-118, I-119, I-122, I-123, I-131, I-132, I-136, I-140, I-141, I-142, I-143, I-146, I-148,I-149, I-152, I-153, I-154, I-155, I-157, I-158, I-160, I-164, I-165, I-166, I-168, I-172, I-178, I-179, I-182, I-185

Issue

Many group and individual submissions comment that over the coming decades the Project will contribute to climate change through the supply of coal to NSW power stations. Specific comments included that:

- climate change and associated impacts are accelerating;
- between 10 Mtpa and 34 Mpta (variously quoted in submissions) of greenhouse gases will be attributed to the Project annually;
- the Project conflicts with the precautionary principle, the intergenerational principle, NSW and Commonwealth policy and international pledges to reduce greenhouse gas emissions, dependence on fossil fuels and climate change impacts; and
- the use of coal for electricity generation is not sustainable.

Response

The EA does not deny that climate change is occurring and considers global warming impacts in the long-term assessment of the final void.

As described in the EA, the annual Scope 1 and Scope 2 greenhouse gas emissions will be 0.2 Mt CO_2-e and 0.16 Mt CO_2-e respectively when the Project is at full production. The greatest contributor to Scope 1 emissions will be from mobile plant and equipment using diesel fuel. However, the low overburden to coal strip ratio in the Project mining area means diesel use and associated emissions will be low compared with many open cut mines in NSW. Also, the coal seams of the resource have low methane and CO_2 content so fugitive emissions will be low (Section 15.4 of the main EA).

The annual Scope 3 emissions, for which the use of coal to generate electricity will be far the greatest contributor, will be 29.09 Mt CO_2-e. The emissions from power stations using coal from the Project are subject to their own approvals and environmental regulation.

The Project's compatibility with the four principles of ecologically sustainable development (ESD), including the precautionary principle and the intergenerational principle is described in Section 24.2 of the EA.

The global long-term continued and accelerating use of fossil fuels for energy generation is clearly not sustainable without mechanisms to reduce greenhouse gas emissions to the atmosphere. Electricity can be generated by renewable means, such as solar, wind and biomass, but only in relatively small quantities due to the very low energy intensity of these sources. Electricity generation using renewables is not yet able to meet the reliability or cost society demands for electricity and will not be able to in the immediate future. While renewable generation has a supply augmentation role, it is not presently feasible for base load generation (see also Section 19.2.5).

14.2.4 Alternative electricity generation methods

Submissions

G-1, G-4, G-5, G-10, G-11, G-15, G-19, G-20, G-24, I-3, I-6, I-8, I-12, I-13, I-15, I-17, I-18, I-21, I-22, I-23, I-25, I-29, I-31, I-32, I-33, I-34, I-35, I-37, I-39, I-43, I-44, I-45, I-48, I-51, I-52, I-54, I-56, I-57, I-58, I-59, I-60, I-61, I-62, I-64, I-66, I-70, I-73, I-74, I-75, I-79, I-82, I-83, I-84, I-85, I-87, I-89, I-91, I-93, I-94, I-95, I-98, I-99, I-103, I-104, I-107, I-109, I-110, I-113, I-116, I-118, I-119, I-152, I-122, I-126, I-127, I-128, I-129, I-132, I-133, I-134, I-136, I-140, I-141, I-146, I-148, I-151, I-152, I-157, I-161, I-166, I-168, I-169, I-171, I-172, I-173, I-176, I-178, I-180, I-183, I-184

Issues

These submissions comment that the Project is an inappropriate investment by the NSW Government and that it will perpetuate NSW's reliance on coal-fired generation of electricity, inhibiting investment in alternative energy sources and/or diverting government money to support the development of these sources. Submissions also comment the EA does not provide an argument for continued generation of electricity using coal, an analysis of these alternative power sources or electricity demand management. One comment is that these alternative generation methods have low operating costs because they do not need an ongoing supply of coal. Matters raised include that the Project:

- will cost the NSW tax payer between $1.5 billion and $3.4 billion (variously stated costs);
- drives up both private and public costs in the electricity industry;
- provides cheap domestic coal to Upper Hunter and Central Coast power stations and is a subsidy to the power generators that disadvantages renewable energy generators and flow-on jobs and opportunities;
- exacerbates global warming just to keep power prices low;
- diverts money from other public services and infrastructure, eg public education, renewable energy projects, public hospitals, public transport and roads.

Submissions also comment on alternatives to coal-fired generation of electricity, for example:

- installing rooftop solar panels and using feed-in tariffs for domestically generated solar power;
- using ceramic fuel cell technology to generate electricity from natural gas; and
- reducing electricity consumption and peak demand through efficient use of air conditioners; through a mix of regulation, incentives and education; and through improved off-switches to cut standby power.

Responses

The Project is being developed to supply coal to meet the obligations of the energy reform transactions completed on 14 December 2010 by the previous government (the Gentrader transactions). These legally enforceable transactions include obligations to supply coal to the electricity generators and build a coal mine to secure supply.

As described in the main EA (Section 20.3.1), the capital costs over the life of the Project are estimated by CHC to be $1,900 million and the annual operating costs are estimated to be $392 million. These capital and operating costs are in the mid-range for similar coal projects in NSW and Queensland (Tables 14.1 and 14.2). They do not represent the value of a 'subsidy' by the NSW Government, as all or part of these costs will be recovered through the sale of coal from the Project.

Table 14.1 Capital costs for coal projects similar to Cobbora Project

Mine	Owner	Location	Production capacity (Mtpa)	Production start	Capex[2] (million $)	Capex/tonne coal ($)
South Galilee	AMCI and Alpha Coal	Galilee Basin	13.9	2016	$2,300	$165
Cobbora	CHC	Gunnedah Basin	9.5	2015	$1,768[1]	$186
Ulan West	Xstrata	Hunter Valley	7.0	2014	$1,300	$186
Ravensworth North	Xstrata	Hunter Valley	8.0	2013	$1,500	$188
Mt Pleasant	Rio Tinto	Hunter Valley	10.5	2015	$2,000	$190
Mangoola	Xstrata	Hunter Valley	8.0	2011	$1,100	$198
Wandoan	Xstrata	Surat Basin	26.0	2015	$6,000	$231
Alpha	Hancock Coal	Galilee Basin	32.0	2016	$10,500	$328

Notes: Source: Work conducted by Citigroup for NSW Treasury in 2011, as provided by CHC.

1. Based on contracted production of 9.5 Mtpa as opposed to total production of 12 Mtpa.

2. Capital cost

Table 14.2 Operation costs for coal projects similar to Cobbora Project

Mine	Owner	Location	Operating cost[1] ($/t)
Cobbora[2]	CHC	Hunter Valley	30
Alpha	Hancock Coal	Galilee Basin	35
Bengalla	Rio Tinto	Hunter Valley	39
Mangoola	Xstrata	Hunter Valley	29
Moolarben	Yancoal	Hunter Valley	38
Mt Pleasant	Rio Tinto	Hunter Valley	42
Rolleston	Xstrata, Sumisho Coal and IRCA Rolleston	Bowen Basin	37
South Galilee	AMCI and Alpha Coal	Galilee Basin	31
Ulan	Xstrata	Ulan	52
Wandoan	Xstrata	Surat Basin	52
Wilkie Creek	Peabody	Surat Basin	53

Notes: Source: Work conducted by Citigroup for NSW Treasury in 2011, as provided by CHC.

1. Adjusted to remove rail and port charges ($21/tonne for export costs).

2. Based on contracted production of 9.5 Mtpa as opposed to total production of 12 Mtpa.

The four power stations that will be supplied provide about 50% of the electricity generation capacity in NSW (Trade & Investment 2013). This electricity generating capacity will not be replaced by alternative energy sources in the short to medium term. Therefore, coal will need to be bought for these coal-fired power stations within a global market where demand for coal is projected to increase (see Section 19.2.4). The Project will help meet this demand for coal and electricity in NSW.

Development of the Project will help limit electricity price increases in NSW while alternative energy technologies are further developed, along with programs to improve the demand for, or efficient use of, electricity. NSW Government initiatives to reduce greenhouse gas emissions include the NSW Climate Change Fund that provides support for a range of activities, including:

- residential rebates for hot water systems, insulation, rainwater tanks and washing machines;
- the NSW Green Business Program;
- the Public Facilities program;
- the Renewable Energy Development Fund; and
- the School Energy Efficiency program.

The EA supports an application to develop the Project and provides consideration of a 'no project' alternative (EA Section 3.21.2). While the submissions contain a range of initiatives to generate electricity using alternative energy and to reduce electricity consumption, it is not appropriate to consider these and the many other alternatives for electricity generation and energy efficiency. This is beyond the scope of the Project, which is being developed to meet the contractual obligations associated with the Gentrader transactions (Section 14.2.4). Alternative energy sources have been examined in environmental assessments for electricity generating projects, such as Bayswater B Power Station Environmental Assessment (AECOM 2009).

14.2.5 Government emission reduction programs

Submissions

G-4, G-10, G-15, G-27, I-15

Issues

Submissions comment that the Project is contrary to the intent of the following government policies and represents a coal price subsidy provided to the coal-fired generators that disadvantages other forms of energy and will undermine the effectiveness of the carbon price:

- the 'NSW State Plan: NSW 2021 A Plan to Make NSW Number One'. Goal 22 (Protect our natural environment) includes a target to increase renewable energy by 20% by 2020. The priority action is to: "contribute to the national renewable energy target by promoting energy security through a more diverse energy mix, reducing coal dependence, increasing energy efficiency and moving to lower emission energy sources";
- the Commonwealth renewable energy target of 20%; and
- the Commonwealth emissions trading scheme (ETS).

Responses

While the average ash content of the Project ROM coal is higher than coal from many coal mines in NSW, it will be washed to produce product coal with specifications similar to that now used in the power stations. There will be no significant change to the greenhouse emissions from power stations from the use of coal from the Project.

As discussed in Section 14.2.4, the Project does not preclude increasing energy efficiency and moving to lower emission energy sources in NSW. However, it does not contribute to these initiatives or to meeting the Commonwealth renewable energy target of 20%.

The Commonwealth carbon pricing mechanism (or ETS) puts a price on Australia's carbon pollution (Clean Energy Regulator 2013). The mechanism began operation on 1 July 2012. Entities must pay a price for the carbon emissions if they operate facilities that exceed the annual 25,000 tonnes CO_2-e threshold for Scope 1 emissions. There are two stages to the carbon pricing mechanism:

1. Fixed price: the carbon price is fixed for the first three years. In 2012–13 it is $23 a tonne of carbon pollution, in 2013–14 it is $24.15 a tonne and in 2014–15 it is $25.40 a tonne.

2. Flexible price: from 1 July 2015 the price will be set by the market. Most units will be auctioned by the Clean Energy Regulator.

This mechanism will apply to the Project and to the NSW power stations that use coal from the Project.

14.2.6 Greenhouse gas emission reductions

Submission

I-28

Issue

One submission comments: “it is asserted that greenhouse gas emissions will reduce as a result of the mine as its coal will generate less than Victorian brown coal, so this mine will somehow improve the status quo.”

Response

The EA does not state that use of coal from the Project to generate electricity will reduce greenhouse gas emissions. However, the EA notes less greenhouse gas emissions will be produced by NSW power stations using coal from the Project than if the same amount of electricity was imported from Victoria.

The main EA (Section 24.1.2) states:

> Since 1996, when the National Electricity Market was introduced, about 15–20% of NSW’s electricity needs have been supplied by other states, especially Victoria and Queensland where the generators have their own sources of coal. This arrangement has major cost and environmental implications. Much of the Victorian electricity is generated by brown coal, which produces much higher greenhouse gas emissions (about 50% higher) than black coal. There are also considerable losses in transmitting electricity over the much greater distances from inter-state generating stations.

The lower greenhouse gas emissions from the use of black coal in NSW is recognised by the National Greenhouse Accounts Factors (DCCEE 2011), which provide indirect (Scope 2) emission factors for consumption of purchased electricity from the grid of 1.19 kg CO_2-e/kWh and 0.88 kg CO_2-e/kWh for Victoria and NSW respectively. This does not allow for increased greenhouse gas emissions from the generation of additional electricity to compensate for transmission line losses associated with interstate transfers.

14.2.7 Carbon capture and storage

Submissions

G-1, I-94

Issues

One submission comments that if the Project proceeds, carbon capture and storage (CCS) should be a condition on the mine project proceeding and the proponent should carry the costs for it. Another submission states there is no realistic prospect of widespread cost-effective and safe deployment of CCS.

Responses

Scope 1 greenhouse gas emissions from the Project will be small and will be largely attributable to diesel use and fugitive methane emissions. These sources are not amenable to CCS.

The use of CCS by power stations would have to be considered by the power station operators and would be the subject of environmental approvals for these projects.

14.3 Conclusion

The proposed Project changes do not change the greenhouse gas assessment for the Project. As described in the EA, CHC will apply measures to minimise greenhouse gas emissions, including the use of energy efficient equipment and buildings, and monitor emissions to allow improvements to be identified.