Responses to Submissions

Newcastle Coal
INFRASTRUCTURE GROUP

NEWCASTLE COAL INFRASTRUCTURE GROUP
COAL EXPORT TERMINAL

Responses to Submissions - Part A
Responses to Submissions - Part B
Additional Response to Submissions

December 2006

Responses to Submissions - Part A

No.	Subject	Issue	Response
1	Noise and Vibration	Concerns were raised regarding the use of noise monitoring results from Mayfield West as representative of conditions at Warabrook.	Noise monitoring was conducted in April 2006 as part of the Construction, Operation and Road Transport Noise Impact Assessment (Project noise assessment) to quantify background noise levels and included monitoring at Warabrook/Mayfield West (N5 and N6). The background noise monitoring locations (N5 and N6) are shown on Appendix A1 of the Project noise assessment, Appendix A of the Environmental Assessment (EA). In addition, noise monitoring was carried out during the preparation of the Protech Steel Cold Mill Facility Environmental Impact Statement (EIS)[1] in 2001 to establish background noise levels and industrial noise at 5 Decora Crescent, Warabrook. Traffic noise was noted as the major contributing noise source. Based on analysis of the background noise levels at N5 and N6 and 5 Decora Crescent by Heggies Australia (2006), the following comparisons are made: • Daytime and evening Rating Background Levels (RBLs) are identical. • The night-time RBL used for assessment purposes in the Project noise assessment is conservatively 3dBA lower than the measured RBL at Warabrook in 2001. • The higher daytime, evening and night-time LAeq(period) levels (all noise sources) is consistent with the noise monitoring locations in the Project noise assessment (N5 and N6) having relatively greater exposure to the major traffic noise sources. • Existing industrial amenity levels in Warabrook are likely to be lower by comparison with Mayfield West as exposure to the adjoining industrial commercial areas of Mayfield West, Steel River and Sandgate is reduced by topographic relief. Therefore it is reasonable to conclude that it is more than adequate to use the noise monitoring results from Warabrook/Mayfield West to represent Warabrook as the night-time RBLs have been conservatively estimated in the Project noise assessment. Similarly, the existing industrial amenity levels may have been conservatively overestimated in the Project noise assessment as some areas in Warabrook are less exposed to adjoining industrial area noise sources.

[1] Protech Steel (2001) *Proposed Cold Mill Facility Kooragang Island EIS.*

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2	Noise and Vibration	Concerns were raised regarding the RBLs adopted in the Project noise assessment, given possible different interpretations of the recently released Application Notes for the NSW INP.	An update to the Application Notes for the NSW INP were released on 17 July 2006, after the EA was submitted to the Department of Planning (DoP) (6 July 2006). With reference to the section "*When the RBL for evening or night is higher than the RBL for daytime*", selective adjustments have been recommended to the qualified RBLs and industrial amenity levels presented in the Project noise assessment as determined in accordance with the INP. The Application Notes (July 2006 update) make no reference to the selective adjustments to measured noise data but rather seek to modify Project Specific Noise Levels in accordance with the current perception of "community expectations". The Project noise assessment details a comprehensive background noise monitoring programme comprising of unattended logging and supplementary operator-attended noise surveys. In accordance with the INP, both the RBLs and industrial amenity levels have been derived from the 'long-term' noise logger data using appropriate statistical analysis procedures. These results have been cross checked against the operator-attended 'spot checks' with no appreciable inconsistency to form the basis of any adjustment to the 'long-term' existing noise environment results. As such, based on an analysis undertaken by Heggies Australia (2006), it is considered inappropriate to make selective adjustments to the qualified RBLs and industrial amenity levels as presented in Table 12 of the Project noise assessment.
3	Noise and Vibration	Concerns were raised in regard to the use of "Urban", rather than "Suburban" Indicative Noise Amenity Area criteria for all residential receivers in the Project noise assessment.	Section 1.3 of the Project noise assessment, Appendix A of the EA, makes reference to Section 2.2.1 of the INP, "*Notes to Support the Noise Level Tables*" that define the three core residential receiver types: "Rural", "Suburban" and "Urban". Section 1.3 of the Project noise assessment, Appendix A of the EA quotes the definition of "Urban" receiver type and relates the findings of the existing noise environment within each receiver area and concludes that in each case, all adjacent residential receiver areas clearly fall within the "Urban" noise zone. Further clarification of the justification for the Urban Noise Amenity Zone selection based on the INP description of "Urban" receivers is presented below. ***INP Description of Urban Receivers - an area with an acoustical environment that:*** • ***is dominated by 'urban hum' or industrial source noise*** Industrial noise emanating from the Kooragang Island and Mayfield North industrial areas is an audible characteristic of all residential receiver areas (Section 3.2 of the Project noise assessment, Appendix A of the EA). In addition, Appendix D of the Project noise assessment, Appendix A of the EA, notes that while vehicle noise was detected during operator attended noise surveys at all locations, during evenings and night-time the audible environment is "dominated by urban hum" and is likely always to remain so while Kooragang Island remains used for

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			industrial purposes and there are major arterial roads in the locality. • ***has through traffic with characteristically heavy and continuous traffic flows during peak periods*** As reported in the Road Transport Assessment, Appendix C of the EA, the Pacific Highway (Mayfield, Mayfield West/Warabrook, Sandgate), Nelsons Bay Road (Stockton, Fern Bay) and Tourle Street (Mayfield West) are arterial roads which experience traffic flows of around 20,000 vehicle movements per day. Industrial Drive (Mayfield West, Mayfield, Mayfield North, Mayfield East) experiences traffic flows in excess of 30,000 vehicle movements per day. This data indicates that the roads are characteristic of heavy and continuous traffic flows, especially during peak periods. The road network is shown on Figure 4-19 in the EA. • ***is near commercial districts or industrial districts*** All residential receiver areas are proximally "near" to industrial and/or commercial districts, including Kooragang Island, Mayfield North and Carrington. These districts' proximity to Mayfield West, Mayfield, Mayfield East, Warabrook, Sandgate, Fern Bay and Stockton is shown on Figure 4-19 in the EA. Nearby commercial or industrial districts are visually and audibly "connected" to these residential areas - and there is a long history of "social connection" as well. • ***has any combination of the above,*** The residential areas have ALL of the characteristics described above. ***This area may be located in either a rural, rural-residential or residential zone as defined on an LEP or other planning instrument, and also includes mixed land-use zones such as mixed commercial and residential uses.*** Stockton, Warabrook and Mayfield are zoned Residential under the Newcastle Local Environmental Plan (LEP). Fern Bay is zoned Residential under the Port Stephens LEP. The information above indicates that the residential receiver areas of Warabrook, Mayfield, Stockton and Fern Bay exhibit ALL of the characteristics which define the Urban Noise Amenity Zone under the NSW INP. These characteristics will continue to apply for the foreseeable long term. The INP's Suburban Amenity Zone is defined below (extracted from the INP's Application Notes to Table 2.1). The localities represented by Noise Receivers labelled N1 to N8 in the Project noise assessment, Appendix A of the EA, exhibit NONE of the characteristics associated with these definitions. ***INP Description of Suburban Receivers - Suburban - an area that has local traffic with characteristically***

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intermittent traffic flows of with some limited commerce or industry. This area often has the following characteristics:

As described above - the residential receiver areas are characterised by noise from arterial traffic flows. As also noted above, extensive commerce and/or industry is a key feature of the residential receiver areas.

- decreasing noise levels in the evening period (1800-2200); and/or

Noise surveys indicate that background noise levels generally remain steady or increase into the evening periods.

- evening ambient noise levels defined by the natural environment and infrequent human activity.

As described above, all of the residential receiver areas are characterised by "urban hum" - not noise from the natural environment. In some cases ocean noise contributes to the background noise environment subject to weather conditions.

This area may be located in either a rural, rural-residential or residential zone as defined on an LEP or other planning instrument, and also includes mixed land-use zones such as mixed commercial and residential uses."

Fern Bay and Stockton are not *small villages or towns* but rather urban residential areas adjoining the Port of Newcastle acoustically exposed to existing industrial areas and associated transportation networks (operating 24 hours per day, 7 days per week).

Stockton, Warabrook and Mayfield are zoned Residential under the Newcastle LEP. Fern Bay is zoned Residential under the Port Stephens LEP.

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<tr><td>4</td><td>Noise and Vibration</td><td>Concerns were raised regarding the adopted Project Specific Noise Levels for the Project in the Project noise assessment given possible different interpretations of the recently released Application Notes for the NSW INP.</td><td>

The intrusive and amenity criteria used for assessing noise impacts from the Project are presented in Table 14 of the Project noise assessment, Appendix A of the EA.

The assessment criteria have been adjusted in accordance with the INP's Application Notes (July 2006 update) and the intrusive and amenity assessment criteria for the residential, commercial and industrial receiver areas are presented in the table below. The original Project noise assessment levels are shown in brackets where the adjusted criteria is different to the original criteria. It is important to note that all Project predicted intrusive noise emissions represented in the Project noise assessment remain below the adjusted intrusive criteria.

Adjusted Intrusive and Amenity Noise Assessment Criteria (dBA re 20 µPa)

Receiver Area	ID Location	Intrusive LAeq(15minute)			Amenity LAeq(period)		
		Day	Evening	Night	Day	Evening	Night

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Fern Bay West	All Residential	55	47	47 (49)	60	48	38
Fern Bay East	All Residential	45	45 (49)	45 (47)	60	50	41
Stockton West	All Residential	47	47 (49)	47 (49)	60	47	38
Stockton East	All Residential	46	46 (48)	46 (48)	60	50	39
Warabrook/ Mayfield West	All Residential	50	50 (51)	46	60	48	41
Mayfield	All Residential	51	51 (52)	48	60	48	39
Carrington	All Residential	47	46	42	60	48	43
Sandgate	All Commercial	Intrusive noise not applicable			65	65	65
Mayfield West	All Steel River	Intrusive noise not applicable			65	65	65
Kooragang Island	All Industrial	Intrusive noise not applicable			70	70	70
Mayfield North	All Industrial	Intrusive noise not applicable			70	70	70
Any	School	Intrusive noise not applicable			External 45 when in use		
Any	Hospital	Intrusive noise not applicable			External 50 when in use		

Note 1: Daytime 0700 hours to 1800 hours, Evening 1800 hours to 2200 hours, Night-time 2200 hours to 0700 hours.

Note 2: The noise criteria apply under meteorological conditions relevant to the project site of:

- Wind velocity up to 3 m/s at 10 metres above ground level; or
- Temperature gradients up to 3°C/100 metres and wind velocities up to 2 m/s at 10 metres above ground level;
- Where the wind velocity and temperature gradients are determined to be relevant to the project site in accordance with the NSW INP.

The intrusive noise level generally controls during the daytime and evening due to the relatively continuous nature of Project noise sources producing a relatively small difference (e.g. 3 dBA) between Project intrusive and amenity noise levels. During night-time, the controlling criteria are generally the amenity noise levels, however both criteria are included to ensure compliance with the intent of the INP and meet with “community expectations”.

The adjusted intrusive and amenity noise assessment criteria presented in the table above can be further distilled to form the basis of Project Operating Noise Limits as presented in the table below.

Proposed Project Operating Noise Limits (dBA re 20 µPa)

Receiver Area	ID Location	Intrusive LAeq(15minute)			Amenity LAeq(period)
		Day	Evening	Night	Night
Fern Bay West	All Residential	55	47	47	38
Fern Bay East	All Residential	45	45	45	41

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<tr><td>Stockton East</td><td>All Residential</td><td>46</td><td>46</td><td>46</td><td>39</td></tr>
<tr><td>Warabrook/ Mayfield West</td><td>All Residential</td><td>50</td><td>50</td><td>46</td><td>41</td></tr>
<tr><td>Mayfield</td><td>All Residential</td><td>51</td><td>51</td><td>48</td><td>39</td></tr>
<tr><td>Carrington</td><td>All Residential</td><td>47</td><td>46</td><td>42</td><td>43</td></tr>
<tr><td>Sandgate</td><td>All Commercial</td><td colspan="3">Intrusive noise not applicable</td><td>65 (anytime)</td></tr>
<tr><td>Mayfield West</td><td>All Steel River</td><td colspan="3">Intrusive noise not applicable</td><td>65 (anytime)</td></tr>
<tr><td>Kooragang Island</td><td>All Industrial</td><td colspan="3">Intrusive noise not applicable</td><td>70 (anytime)</td></tr>
<tr><td>Mayfield North</td><td>All Industrial</td><td colspan="3">Intrusive noise not applicable</td><td>70 (anytime)</td></tr>
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Note 1: Daytime 0700 hours to 1800 hours, Evening 1800 hours to 2200 hours, Night-time 2200 hours to 0700 hours.
Note 2: The noise criteria apply under meteorological conditions relevant to the project site of:

Wind velocity up to 3 m/s at 10 metres above ground level; or
Temperature gradients up to 3°C/100 metres and wind velocities up to 2 m/s at 10 metres above ground level;
Where the wind velocity and temperature gradients are determined to be relevant to the project site in accordance with the NSW INP.

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<tr><td>5</td><td>Noise and Vibration</td><td>Concerns were raised regarding the identification of the existing industrial noise environment at Fern Bay in the Project noise assessment.</td><td>The Project noise assessment details a comprehensive background noise monitoring programme comprising of unattended logging and supplementary operator-attended noise surveys. In accordance with the INP both the RBLs and industrial amenity levels have been derived from the ‘long-term’ noise logger data using appropriate statistical analysis procedures. These results have been cross checked against the operator-attended ‘spot checks’ with no appreciable inconsistency to form the basis of any adjustment to the ‘long-term’ existing noise environment results.</td></tr>
<tr><td>6</td><td>Noise and Vibration</td><td>Concerns were raised regarding the justification for the derivation of applicable Project specific L_{Aeq} period noise levels in the Project noise assessment that were 3 dBA less than the predicted $L_{Aeq(15\ minute)}$ levels.</td><td>A review of continuous noise emissions conducted by Heggies Australia (2006) from similar existing large scale coal export terminal operations has identified a conservative 3 dBA difference between the $L_{Aeq(15minute)}$ intrusive and $L_{Aeq(period)}$ amenity emissions. The difference arises mostly from relatively large variations in noise propagation conditions (over appreciable distances from source to receiver) during the daytime, evening and night-time periods and, to a lesser extent, on variations in the on-site plant and equipment operating conditions in practice.</td></tr>
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No.	Subject	Issue	Response
7	Noise and Vibration	Concerns were raised that the location of the proposed acoustic barriers were not shown on plans.	The location of the acoustic barrier is described in Section 4.4 of the Project noise assessment, Appendix A of the EA, as follows: *A purpose built acoustic barrier approximately 600 m in length, 5m above rail level and with an offset distance no greater that 3 m from the outer rail. The barrier will commence at the eastern tangent of the rail loop and continue in a clockwise direction and be constructed from a material with a surface density not less an 18 kg per square metre (ie. CSR Hebel Sound Barrier or equivalent materials). It should be noted that the implementation of the acoustic barrier would be dependent on the actual progress of the proposed staged development of the CET (ie. The barrier need only be installed as the capacity of the CET approaches 66 Mtpa in order to facilitate compliance with the relevant Project noise criteria).*
8	Noise and Vibration	Concerns were raised in regard to the conveyor layout design running parallel to Cormorant Road and doubling the conveyor length and number of transfer points.	The conveyor configuration described in the EA is the only viable route given the Newcastle Port Corporation (NPC) requirement that wharf facilities be located as far east as possible. The layout as shown in the EA is required due to the need for an outbound sample point after the buffer bins and sufficient room for shiploader operations to be carried out on the eastern end of the wharf. Section 3.9.3 of the EA provides further information in regard to the alternative layout options considered for the Project.
9	Noise and Vibration	Concerns were raised regarding the existing levels of traffic noise for relevant roads not being included in the Project noise assessment.	Existing levels of traffic noise along relevant roads was not measured or included in the EA as the predicted increase in traffic movements would contribute a negligible increase in the existing daytime and night-time noise level, as stated in Section 9.1 of the Project noise assessment, Appendix A of the EA: *The maximum increase in daytime CET-related traffic flow occurs along Cormorant Road during the construction period. The anticipated 3% increase in vehicle movements corresponds to a very small 0.1 dB increase in the existing daytime $L_{Aeq(15\ hour)}$ noise level and is negligible.* *Similarly, the maximum increase in night-time CET-related traffic flow also occurs along Cormorant Road during the construction period. The anticipated 12% increase in vehicle movements corresponds to only a small 0.5 dB increase in the existing night-time $L_{Aeq(9\ hour)}$ noise level – and is also considered negligible.*
10	Noise and Vibration	Concerns were raised with respect to potential noise impacts, in particular: • potential construction activities between the hours of 6.00 pm and 7.00 am (i.e. outside of daytime hours);	Construction activities with the potential to be audible at surrounding residential areas would generally be undertaken between 7.00 am and 6.00 pm, up to seven days per week as stated in Sections ES3.2 and 4.3.2 of the EA, as follows: *The Project would include the construction and commissioning of rail infrastructure, the coal storage area, wharf facilities and shiploaders. An initial 33 month construction schedule is expected for a Project capacity of 33 Mtpa. Construction activities with the potential to be audible at surrounding residential areas would be undertaken during daytime hours up to seven days per week…* A Noise Monitoring Programme (NMP) including noise control measures would be developed for the Project as stated the Draft Statement of Commitments, Section 5 of the EA:

No.	Subject	Issue	Response
		• proposed noise monitoring in the Draft Statement of Commitments; • enforcement of noise control measures if exceedances of noise criteria occur; and • exclusion of safety alarms from the noise model.	• *noise monitoring to be undertaken for the Project (i.e. monitoring locations, frequencies, parameters and specifications);* • *Project noise mitigation measures;* • *a protocol for the ongoing management of noise;* • *procedures to be followed in the event of an exceedance of criteria; and* • *complaint response protocols.* *The NMP will detail specific actions for responding to exceedances of criteria and complaints if they occur. The results of noise monitoring will be used to optimise noise controls, validate the noise modelling predictions and will be reported to relevant authorities via the Annual Environmental Management Report (AEMR).* *The Project noise monitoring will comprise quarterly attended and unattended monitoring. Quarterly monitoring will be conducted at up to six locations in the vicinity of the Project. Noise monitoring will be conducted in accordance with AS 1055-1997 Acoustics – Description and Measurement of Environmental Noise and the Industrial Noise Policy (INP).* Consideration of alarms is provided in Section 4.4 of the Project noise assessment, Appendix A of the EA as follows: *The L_{Aeq} sound power levels presented in Table 15 do not include noise emissions which emanate from alarms. Alarms will be subject to procurement specifications detailing the tone frequency, noise emission levels, directionality and coverage. They will be installed to optimise safety and to minimise off-site noise leakage. In the unlikely event that alarm noise remains a source of disturbance, then further on-site optimisation and fine adjustments will be examined to achieve further noise reductions without compromising safety standards.*
11	Noise and Vibration	Concerns were raised with respect to the potential effect of pile-driving operations on residential receivers due to construction of the Project.	Based upon the predicted buffer distances from single hydraulic hammering, it is concluded that the damage and annoyance risk to all residential receivers is negligible as the nearest dwellings are well beyond 180 m (Section 5.3 of the Project noise assessment, Appendix A of the EA). As stated in the Draft Statement of Commitments (Section 5 of the EA), monitoring of construction vibration would be undertaken at adjacent industrial receivers within 180 m of piling activities to assess compliance with relevant criteria. Vibrational peak particle velocity (mm/s) would be measured in accordance with relevant standards.

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12	Noise and Vibration	Regulatory agencies have recommended conditions of approval for the Project including limiting the type of trains that are received by the Project.	NCIG is not aware of any restriction imposed on any of the three existing coal terminals in NSW with respect to the type of trains received. The NCIG Coal Export Terminal (CET) has been designed to accept any locomotives. The equipment design maximum L_{Aeq} sound power levels (SWLs) (dBA re 10 pW) used in the Project noise assessment (Table 15) includes overall L_{Aeq} SWLs for locomotives on the Project rail spurs and rail loops on low idle, high idle, arrival and moving off, ranging from 105 dBA to 109 dBA. Further, overall L_{Aeq} SWLs for wagon creak, wheel squeal and coupling take-up used in the Project noise assessment were 116 dBA, 113 dBA and 106 dBA, respectively. These SWLs used are considered to be conservative for the purposes of the Project noise assessment and should not limit the use of specific locomotives. Further, the scenarios modelled in Project noise assessment were developed to be representative of worst-case noise emissions for noise sensitive receivers to the west with the orientation of trains on the rail spurs and rail loops located in the model with a bias to the west. Based on the above, the type of locomotives that operate on the Project rail spurs and rail loops should not be limited because it would provide unfair commercial advantage to the other coal loaders and to some of the rail operators. The relevant assessment is presented in Section 4.3.2 of the EA.
13	Noise, Air and Vibration	Concerns were raised with respect to: • the potential for increased train and truck movements in the Newcastle area and associated noise impacts; and • assessment of air quality and noise impacts from off-site train movements.	Noise associated with train movements on the Australian Rail Track Corporation (ARTC) rail network in the Newcastle area is regulated by ARTC's Environmental Protection Licence (EPL) 3142, as stated in Sections 3.7.1 and 4.3.2 of the EA: *Train movements on the ARTC rail network are not part of the Project and are not assessed in this EA. Noise associated with the operation of trains on the Project rail infrastructure corridor is assessed in this EA.* Sections 3.6.5 and 4.3.2 of the EA present a comprehensive description of the regulation or rail operations on the ARTC rail network. Noise associated with truck movements is assessed in the Project noise assessment, Appendix A of the EA and is summarised in Section 4.3.2 of the EA as follows: *The maximum Project-related incremental increase in daytime traffic flow occurs during the construction period along Cormorant Road. The anticipated 3% increase in vehicle movements corresponds to a negligible 0.1 dB increase in the existing daytime $L_{Aeq(15hour)}$ noise level (Appendix A).* *Similarly, the maximum Project-related incremental increase in night-time traffic flow also occurs along Cormorant Road during the construction period. The anticipated 12% increase in vehicle movements corresponds to a 0.5 dB increase in the existing night-time $L_{Aeq(9hour)}$ noise level and is also considered negligible (Appendix A).*

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			Operational Project traffic flows are significantly lower than during the construction period. Therefore, the increase in road noise during operation of the Project would be lower than for construction. Air quality and noise impacts from off-site train movements are managed by the ARTC under EPL 3142 and are therefore not assessed in the EA.
14	Air	Concerns were raised with respect to greenhouse gas emissions and the potential for the construction and operation of the Newcastle Coal Infrastructure Group (NCIG) CET to contribute to global climate change and hence climate related environmental or human health impacts in the Hunter Region or in NSW.	An assessment of Project greenhouse gas emissions is provided in the Air Quality Impact Assessment, Appendix B of the EA. As stated in Section 4.4.2 of the EA: *The major source of greenhouse gas emissions from the Project development would be generated indirectly by the use of electricity to power the coal storage conveyors and stacker reclaimers, shiploading machines and associated equipment. In addition, minor emissions would occur from the combustion of diesel and petrol in mobile equipment on-site.* *An assessment of the Project greenhouse gas emissions was conducted using empirical emission factors provided by the Australian Greenhouse Office (AGO) (2005) (Appendix B).* Section 3.9.4 of the EA, states that: *Greenhouse gases generated at the Project are estimated at 39,990 tonnes of carbon dioxide equivalent per annum (t $CO_{2\text{-}e}$/year) for operations at 33 Mtpa and 69,760 t $CO_{2\text{-}e}$/year for operations at 66 Mtpa.* *The EA does not contain an assessment of the greenhouse gas emissions which may be emitted from mining operations, rail transport or the burning of coal that is exported through the Project.* *The greenhouse gas emissions from mining and associated domestic rail transport are matters that have been or will be specifically considered in the assessment process for individual mining operations. The Project does not seek approval for any mining operations. Therefore, it would be inappropriate to include greenhouse gas emissions associated with mining operations when assessing the greenhouse gas emissions from the operation of the Project.* *Similarly, it would be inappropriate to incorporate an assessment of the emissions of the burning of coal that is exported through the Project, when assessing the impacts of the Project. The former are impacts created by third party consumers of coal and these impacts are regulated by regimes in the consumers' countries.* Further, it is stated in Section G3.8 in the Socio-Economic Assessment, Appendix G of the EA:

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			At a global level, substitution effects also become important. Refusal of the Project and associated infrastructure and mining developments would not stop the burning of coal by other countries. The coal would simply be sourced from elsewhere. Hence, greenhouse gas emissions from the burning of the coal overseas would occur regardless, and should not be attributed to the Project. *The major destinations of Hunter Valley coal exports are Japan, Korea and Chinese Taipei (ABARE, 2005). Strong growth in demand is forecast for Korea, Chinese Taipei and Malaysia, while Japanese thermal coal imports are projected to increase more slowly (ABARE, 2005). South Korea, Malaysia and Japan have all signed and ratified the Kyoto protocol, while Chinese Taipei has not. Nevertheless, each of these countries has the sovereignty to address greenhouse gas emissions as they see fit within any requirements of conventions and protocols to which they are signatories.* There is no available evidence and no reasonable conclusion open to the Director-General to the effect that the export of up to 66 million tonnes per annum (Mtpa) of coal from Newcastle via the NCIG CET would result in a higher level of global greenhouse gas emissions than would otherwise occur; or have an impact on the environment of NSW that would not otherwise arise. The reason for this is that if coal was not exported through the NCIG CET, overseas users of coal would inevitably, given the ample global reserves of coal and the active international market in coal, obtain coal from another source, and utilise it in lieu of any coal that they may have used from the NCIG CET. As a result, the Project would not affect the level of greenhouse emissions from overseas facilities that utilise coal or global greenhouse gas emissions. Further, there is no evidence to demonstrate that the emission of greenhouse gases from the burning of 66 Mtpa of coal in overseas destinations would be likely to have an effect on the environment within NSW. This lack of evidential connection between overseas coal combustion and the export of Australian coal is endorsed by the following recent observations of Dowsett J in the Federal Court of Australia, dealing with precisely this issue in the context of the Environment Protection and biodiversity Conservation Act (EPBC Act) (Cth): *"72. I have proceeded upon the basis that greenhouse gas emissions consequent upon the burning of coal mined in one of these projects might arguably cause an impact upon a protected matter, which impact could be said to be an impact of the proposed action. I have adopted this approach because it appears to have been the approach adopted by Mr Flanigan. However I am far from satisfied that the burning of coal at some unidentified place in the world, the production of greenhouse gases from such combustion, its contribution towards global warming and the impact of global warming upon a protected matter, can be so described. The applicant's concern is the possibility that at some unspecified future time, protected matters in Australia will be adversely and significantly affected by climate change of unidentified magnitude, such climate change having been caused by levels of greenhouse gases (derived from all sources) in the atmosphere. There has been no suggestion that the mining, transportation or burning of coal from either proposed mine would directly affect*

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			any such protected matter, nor was there any attempt to identify the extent (if any) to which emissions from such mining, transportation and burning might aggravate the greenhouse gas problem. The applicant's case is really based upon the assertion that greenhouse gas emission is bad, and that the Australian government should do whatever it can to stop it including, one assumes, banning new coal mines in Australia…" *Wildlife Preservation Society of Queensland Proserpine/Whitsunday Branch Inc The Minister for Environment and Heritage and Ors [2006] FCA 736.* To require an assessment of the consequences of the emissions of greenhouse gases from unknown facilities in unknown locations the subject of unknown mitigation measures or offsets is to exceed the requirements of a reasonable level of assessment.
15	Air	Concerns were raised with respect to the Air Quality Impact Assessment, including: • exclusion of $PM_{2.5}$ from Project air quality assessment criteria; • consideration of potential impacts on local schools; • consideration of strong westerly winds; • consideration of coal dust emissions; and • consideration of the use of organic material for coal dust suppression to reduce dust suppression water use.	NSW has Project specific PM_{10} goals that have been addressed in the Air Quality Impact Assessment, Appendix B of the EA. $PM_{2.5}$ goals are long-term reporting goals that are not applicable to industrial projects in NSW (Section 3 of the Air Quality Impact Assessment, Appendix B of the EA). Applicable air quality goals would be met at all sensitive receivers around the Project including local schools, as stated in Section 10 of the Air Quality Impact Assessment, Appendix B of the EA: *It is concluded that air quality impacts would be at acceptable levels and that air quality goals would not be exceeded at sensitive receptors due to the operation of the CET at 66 Mtpa. It follows also that air quality impacts would be acceptable for the initial 33 Mtpa operations.* *The implementation of proposed dust control measures should ensure that the actual air quality impacts are lower than those predicted in this study.* Windroses displaying a proportion of strong westerly winds for areas surrounding and adjacent to the Project are included as Figures 4 to 13 of the Air Quality Impact Assessment, Appendix B of the EA and were used in the assessment of air quality impacts. As stated in Section 4.4.3 of the EA, dust control measures would be installed as part of the Project: *Engineering controls involve measures such as: covering/enclosing conveyors; enclosing transfer points; using dust collection systems at the rail unloading stations; and installation of spray systems on transfer points and stockpiles (Appendix B). The specific air quality control measures that are proposed for the Project are listed below:* • *moisture levels of the coal stockpiles would be monitored and maintained to minimise dust emissions;*

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			• *a dust extraction system would be provided at the train unloading stations, with the hopper designed for dust containment;* • *coal transfer conveyors would be covered or enclosed on three sides, except for yard and wharf conveyors;* • *conveyors over roads would be fully enclosed;* • *conveyor transfer points would be fully enclosed;* • *buffer bins would be fully enclosed; and* • *water sprays would be used on stockpiles and immediately after conveyor transfer points.* *The water sprays on the coal stockpiles would include rain gun type sprays mounted on the berms approximately 60 m apart on each side of the coal stockpiles (Appendix B). The system would be controlled by software integrated with the on-site meteorological station (Section 4.2.2). The moisture status of coal stockpiles and relevant meteorological conditions would be monitored and dust suppression sprays on the coal stockpiles would be automatically activated to minimise dust emissions as required.* The Environmental Risk Analysis (ERA), Appendix J of the EA, assessed the potential risk of coal dust emissions from NCIG operations as a low risk ranking with the proposed implementation of mitigation measures such as water sprays. The use of chemicals to seal coal stockpiles is generally employed on long-term, dormant stockpiles where there is no disturbance of the stockpile for long periods of time. This is considered unsuitable for the Project due to the requirement of continuous stacking and reclaiming of coal. The use of water sprays is consistent with existing dust suppression controls used at the Port Waratah Coal Services (PWCS) Carrington and Kooragang Island Coal Terminals.
16	Air	Concerns were raised regarding the robustness of the proposed Air Quality Monitoring Programme and the possibility of a joint air quality monitoring programme with PWCS.	As stated in Section 4.4.3 of the EA: *An AQMP would be prepared for the construction and operation the Project. The AQMP would describe the following elements:* • *air quality monitoring to be undertaken for the Project;* • *Project mitigation measures with respect to air quality;* • *a protocol for the ongoing management of air quality;* • *procedures to be followed in the event of an exceedance of criteria should they occur; and* • *complaint response protocols.* *Notwithstanding the predicted compliance with applicable air quality criteria, the AQMP would detail specific*

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			actions for responding to exceedances of criteria and complaints should they occur. The results of the air quality monitoring would be used to optimise air quality controls, validate the air quality modelling predictions and would be reported to relevant authorities via the AEMR (Section 5). *A network of up to six dust depositional gauges would be installed for the Project prior to the commencement of construction. These gauges would be installed on Kooragang Island and in surrounding residential areas (such as Mayfield, Fern Bay and Stockton).* *The dust deposition gauges would be analysed for ash content and insoluble solids in accordance with AS 3580.10.1-1991 Methods for Sampling and Analysis of Ambient Air – Determination of Particulates – Deposited Matter – Gravimetric Method.* *A HVAS would be installed at Stockton to facilitate monitoring of PM_{10} concentrations. The HVAS would monitor PM_{10} over a six day continuous cycle in accordance with the Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales (EPA, 2001).* Notwithstanding the above, NCIG would establish an Air Quality Monitoring Programme, consistent with Project Approval conditions and the Environment Protection Licence for the Project. Further, NCIG intends to pursue opportunities to integrate the Air Quality Monitoring Programme with the PWCS monitoring network as stated in Section 4.4.3 of the EA: *NCIG intends to pursue opportunities to integrate its monitoring networks with the PWCS monitoring network. Where practicable, this would include the sharing of data.*
17	Air	Concern was raised with respect to the potential for release of air contaminants associated with the Kooragang Island Waste Emplacement Facility during development of the rail infrastructure corridor.	A portion of the area leased to NCIG by Regional Land Management Corporation (RLMC) is the corridor across the Kooragang Island Waste Emplacement Facility (KIWEF) that is required for the Project rail infrastructure. The capping of these areas is described in Section 3.6.3 of the EA as follows: *The closure/capping of the KIWEF to the satisfaction of the DEC would be undertaken by the RLMC and the timing of this activity is outside of the control of NCIG. The localised capping of any landfill areas traversed by the Project rail infrastructure would be undertaken by NCIG during Project construction works in such a manner that can be readily integrated with the final capping of the KIWEF and meets the relevant goals of benchmark techniques 28 and 29 in Environmental Guidelines: Solid Waste Landfills (EPA, 1996) (Sections 2.4.1 and 4.7.2 and Appendix D). This would be achieved by the inclusion of the following aspects in the rail infrastructure corridor design:* • *A seal-bearing surface (i.e. prepared sub-grade).*

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			• *A 0.5 m thick sealing layer with an effective permeability of not greater than 1x10^{-8} metres per second (m/s) (unless otherwise agreed by the DEC). A geo-synthetic and/or geo-membrane would be incorporated into this layer where necessary to achieve the desired effective permeability and/or to protect the integrity of the sealing layer.* • *Incorporation of a drainage system along the rail infrastructure corridor to maximise rainfall runoff and minimise infiltration. The drainage system would include table drains along the length of the corridor to collect and divert runoff to the existing site drainage system via sediment control structures. The rail embankment would include culverts where it traverses low points in the existing topography to allow drainage across its alignment. Existing drainage structures from the centre of the rail loop would be maintained (Figure 2-1).* • *An infiltration drainage layer with an effective permeability not less than 1x10^{-5} m/s and a revegetation layer would be placed across the capping layer as part of Project closure and rehabilitation works.* As stated in Section 4.4.3 of the EA, air quality management and mitigation measures would be implemented during construction of the Project (including construction of the rail infrastructure corridor), including: • *areas to be disturbed would be minimised as far as practicable;* • *exposed surface areas would be stabilised as quickly as practicable;* • *soils would be removed from trucks entering and leaving the Project site; and* • *exposed surface areas and traffic areas would be watered using water trucks (or similar) to minimise the generation of dust.* *With respect to the potential for liberation of contaminated dust (Section 4.4.2) a SEMP* [Soil and Excavation Management Plan] *would be prepared for this Project (Section 4.7.2). The SEMP would describe the measures to manage potentially contaminated soils and dust generation/volatilisation potential. These measures would include (Appendix D):* • *using water sprays to control dust;* • *minimising the surface area disturbed by excavation at any one time;* • *confining vehicle movements to designated access routes;* • *limiting the speed of vehicles on unpaved roads; and* • *immediate encapsulation of materials considered unsuitable for use as construction fill.*

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18	Ecology	Concerns were raised regarding potential impacts upon Ramsar wetlands and the Hunter Estuary.	As stated Section E1.5.1 of the Flora Assessment, Appendix E of the EA: *The Hunter Estuary Wetlands are also listed as a Wetland of International Importance under the Ramsar Convention (Ramsar Convention, 2006).* For the purposes of the Ramsar listing, the Hunter Estuary Wetlands consists of Kooragang Nature Reserve and Shortland Wetlands. The Project is not likely to have a significant impact on the ecological character of this Ramsar Wetland, as it is unlikely to result in: • areas of the wetland being destroyed or substantially modified; • a substantial or measurable change in the hydrological regime of the wetland; • the habitat or lifecycle of a native species dependant upon the wetland being seriously affected; • a substantial and measurable change in the water quality of the wetland; or • an invasive species that is harmful to the ecological character of the wetland being established (or an existing invasive species being spread) in the wetlands. This conclusion is based on the following: • There is a buffer between the Project infrastructure and the Hunter Estuary Wetlands Ramsar Site. The Project site is situated approximately 1 km to the south of the main area of Kooragang Nature Reserve, approximately 500 m to the east of a smaller area of Kooragang Nature Reserve adjacent to the south arm of the Hunter River and approximately 1.5 km to the east of Shortland Wetlands. • The site drainage network (including primary and secondary settling ponds and site water pond) would be established at the commencement of construction activities to capture site runoff and to manage sea water draining from dredged material during preloading of the coal storage area. Stormwater runoff from areas external to the Project site would be directed around the Project infrastructure areas by table drains and culverts to the existing stormwater drainage system on Kooragang Island. • Although the Project would increase the existing level of noise, it is considered that the impact of noise generated by the Project on the fauna of the Hunter Estuary Wetlands would be minimal. The noise generated by the Project would be similar in nature and magnitude to that of existing industrial developments on and around Kooragang

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			Island. • The effect of dust caused by the Project on the health and viability of the surrounding vegetation is expected to be minimal. PWCS have conducted air quality monitoring around the Kooragang Coal Terminal since 1982[2]. A dust deposition gauge and a directional dust gauge are located to the north of the Kooragang Coal Terminal in Kooragang Nature Reserve[3]. Results for the dust deposition gauge between 1990 and 1995 indicate that the deposition did not exceed the maximum criterion of 4 $gm^{-2}month^{-1}$ for residential areas. Notwithstanding, dust controls would be employed, including watering of potential dust generating surfaces, to minimise dust emissions from the Project and associated potential impacts on surrounding vegetation.
19	Ecology	Specific concerns were raised regarding the potential impact of the Project on the Green and Golden Bell Frog, including: • potential impacts on known habitat; • the suitability of the Kooragang Island Nature Reserve and Ash Island as potential habitat; • the peer review; • consideration of the Department of Environment and Conservation (DEC) Priority Action and Priority Action Statement; • consideration of cumulative effects from future development; • suitable consideration of	To assist in identifying whether the Project is likely to have a significant effect on threatened fauna (including the Green and Golden Bell Frog), an evaluation of the potential impacts of the Project was undertaken and included in Section F3.6 of the Fauna Assessment, Appendix F of the EA. The Fauna Assessment was prepared in association with (i.e. co-authored by) Professor David Goldney. As stated in Section F2.4 of the Fauna Assessment, Appendix F of the EA: *To assist in identifying whether the potential impacts of the Project are likely to have a significant effect on threatened and migratory fauna species, evaluations were conducted. These evaluations were based on the Draft Guidelines for Threatened Species Assessment (DEC and DPI, 2005) and included consideration of the following items:* • *How is the proposal likely to affect the lifecycle of a threatened species and/or population?* • *How is the proposal likely to affect the habitat of a threatened species, population or ecological community?* • *Does the proposal affect any threatened species or populations that are at the limit of its known distribution?* • *How is the proposal likely to affect current disturbance regimes?* • *How is the proposal likely to affect habitat connectivity?* • *How is the proposal likely to affect critical habitat?* An evaluation for the Green and Golden Bell Frog is included in Section F3.6.1 of the Fauna Assessment, Appendix F of the EA. It is considered that the Project would be unlikely to have a significant effect on the Green and Golden Bell Frog (Section ES3.4 of the EA). Specifically, it is considered that the Project is not likely to affect the lifecycle or habitat of the Green and Golden Bell Frog or to affect current disturbance regimes, habitat connectivity or critical habitat.

[3] Port Waratah Coal Services (1996) *Kooragang Coal Terminal Stage 3 Expansion EIS*.

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		the large Green and Golden Bell Frog population that is located in the Project area and outside of the Kooragang Island Nature Reserve; and • barrier effects on habitat connectivity.	Two frog specialists (Associate Professor Michael Tyler and Dr. Arthur White) were commissioned as peer reviewers of the assessment of the potential impacts on the Green and Golden Bell Frog in the EA. Associate Professor Michael Tyler (AO, MSc, DSc, FAIBiol.) and Dr. Arthur White (BSc, PhD, Dip Ed) were chosen as peer reviewers of the Fauna Assessment due to extensive relevant experience. Associate Professor Michael Tyler's relevant experience includes: • Visiting Research Fellow, Department of Environmental Biology, University of Adelaide, 2002 - Present. • Associate Professor, Department of Environmental Biology, University of Adelaide, 1984 – 2001. • Senior Lecturer, Department of Zoology, University of Adelaide, 1979 – 83. • Lecturer, Department of Zoology, University of Adelaide, 1975 – 78. Dr. Arthur White's relevant experience includes: • Director of Biosphere Environmental Consultants Pty Ltd, a company that specialises in fauna-related projects. • Involved in field surveys and studies on native fauna since 1978. These have included all vertebrate groups but special expertise has been developed in the area of threatened and endangered herpetofauna (frogs and reptiles). • Involved in various aspects of frog research in Australia since 1979. This research has included studies of the natural history, distribution, conservation status and ecology of a range of species, notably the Green and Golden Bell Frog. • Biosphere Environmental Consultants have undertaken various major and minor faunal studies on behalf of both private and government agencies. These include general fauna surveys, targeted surveys for threatened and endangered species, Species Impact Statements, Plans of Management and habitat management and creation programs. Dr White is an adviser to the NSW Scientific Committee (National Parks and Wildlife Service [NPWS]) and a member of the Cane Toad Control Panel. Both specialists concur with the findings of the assessment and each stated (Attachment 3 of the EA):

[3] DEC (2005) *Green and Golden Bell Frog – Priority Actions.*
[4] DEC (2006) *Draft Threatened Species Priorities Action Statement.*

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			… based on the mitigation and compensatory measures presented therein, I am of the opinion that the Project is unlikely to have a significant effect on threatened frog species including the Green and Golden Bell Frog. The Green and Golden Bell Frog – Priority Actions[3] were used in the development of mitigation measures and ecological initiatives in Section F4.3 and F4.4 of the Flora Assessment, Appendix F of the EA. The Priority Actions for the Green and Golden Bell Frog were retrieved from the Priority Action Statement[4]. The assessments considered the cumulative effects of approved projects/developments (e.g. PWCS, Blue Circle Southern Cement and Origin Energy). Potential barriers that could affect the habitat connectivity of the Green and Golden Bell Frog and the associated mitigation measures are described in Section F3.6.1 of the Flora Assessment Appendix F, of the EA: *A series of ponds (e.g. Ponds A, B, C, D, E, F, G, I, J, L, O, T, U, V, AA, AC, AD) which contain potential habitat for the Green and Golden Bell Frog are in the immediate area surrounding the Project site and would not be directly disturbed by the Project.* *Alteration of habitat can result in direct loss of habitat as well as isolation of habitat through creation of barriers to movement between populations. The Project infrastructure may potentially create a barrier between habitats for terrestrial species including the Green and Golden Bell Frog. However, existing industrial development in the immediate area of the Project (including PWCS Kooragang Island Terminal to the north and Blue Circle Southern Cement and Origin Energy to the east) is likely to already present a barrier to wildlife movement, including the Green and Golden Bell Frog.* *Hamer (2002) identified possible Green and Golden Bell Frog movement corridors in the Project site and surrounds, one of which would be disturbed by the Project rail infrastructure corridor. However, the Project rail infrastructure corridor is unlikely to impact on the movement/dispersal of the Green and Golden Bell Frog between the areas north and south of the rail line (Figure F-4) because the design of the rail culverts would include relevant specifications to facilitate the migration/dispersal of the Green and Golden Bell Frog, as discussed in Section F4.2.* *Furthermore, the Green and Golden Bell Frog exhibits strong migration tendencies (including the ability to move several kilometres) and will traverse roads and other unfavourable surfaces to reach desired habitat (NPWS, undated in DEC, 2005a). Based on the above, it is considered that the Project would not significantly affect habitat connectivity for the Green and Golden Bell Frog.* Although several barriers have been created by existing development surrounding the Project area, only one potential barrier to Green and Golden Bell Frog movement corridors, the Project rail infrastructure corridor, would be created by

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			the Project (Section F3.6.1 of the Flora Assessment, Appendix F of the EA). This would be mitigated by the installation of rail culverts that would be designed to facilitate the migration/dispersal of the Green and Golden Bell Frog (Section 4.9.3 of the EA). The design details for the frog underpasses are described in Section 4.9.3 of the EA as follows: *The design of rail culverts would include relevant specifications to facilitate the migration/dispersal of the Green and Golden Bell Frog to minimise the potential that frogs located to the south of the Project rail infrastructure are isolated from the rest of the population to the north. An example of rail culverts which are suitable for use by the Green and Golden Bell Frog are culverts which are around 1 m wide and 1 m high. Similar culverts (frog underpasses) have previously been used successfully for a large-scale development in Woonona, NSW (White, pers. comm.).* *Suitable habitat for Green and Golden Bell Frogs would be established at the 'frog underpasses' in order to encourage the frogs to use them. Habitat creation would include selective planting of plants preferred by the species (e.g. Cumbungi); placing piles of rocks to provide protection from predators in strategic places such as either end of (or within) frog underpasses; and establishment of pond areas at either end of the frog underpasses.* Frog underpasses to aid in the migration of the Green and Golden Bell Frog are identified as "drain (culvert)" on Drawing 3 of the Land Contamination and Groundwater Assessment, Appendix D of the EA.
20	Ecology	Concerns were raised regarding the potential impacts of the Project on migratory bird species.	To assist in identifying whether the Project is likely to have a significant effect on migratory fauna, an evaluation of the potential impacts of the Project was undertaken and included in Section F3.6 of the Fauna Assessment, Appendix F of the EA. The Fauna Assessment was prepared in association with (i.e. co-authored by) Professor David Goldney. As stated in Section F2.4 of the Fauna Assessment, Appendix F of the EA: *To assist in identifying whether the potential impacts of the Project are likely to have a significant effect on threatened and migratory fauna species, evaluations were conducted. These evaluations were based on the Draft Guidelines for Threatened Species Assessment (DEC and DPI, 2005) and included consideration of the following items:* • *How is the proposal likely to affect the lifecycle of a threatened species and/or population?* • *How is the proposal likely to affect the habitat of a threatened species, population or ecological community?* • *Does the proposal affect any threatened species or populations that are at the limit of its known distribution?*

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			• *How is the proposal likely to affect current disturbance regimes?* • *How is the proposal likely to affect habitat connectivity?* • *How is the proposal likely to affect critical habitat?* An evaluation of migratory bird species is included in Section F3.6.14 of the Fauna Assessment, Appendix F of the EA. It is considered that the Project would be unlikely to have a significant effect on migratory bird species. Specifically, it is considered that the Project is not likely to affect the lifecycle or habitat of migratory birds or to affect current disturbance regimes, habitat connectivity or critical habitat.
21	Ecology	Concerns were raised regarding the disturbance of Coastal Wetlands and Coastal Saltmarsh Endangered Ecological Community (EEC) within the Project site. Concerns were also raised with respect to: • the timing of the Flora Assessment vegetation survey for *Zannichella palustris;* • the potential impacts on this species by the Project; and • its distributional limits.	To assist in identifying whether potential impacts of the Project are likely to have a significant effect on threatened flora species and EECs, an evaluation of the potential impacts of the Project was undertaken and included in Section E3.6 of the Flora Assessment, Appendix E of the EA. The Flora Assessment was prepared in association with (i.e. co-authored by) Professor David Goldney. As stated in Section E2.4 of the Flora Assessment, Appendix E of the EA: *To assist in identifying whether the potential impacts of the Project are likely to have a significant effect on threatened flora species and EECs, evaluations were conducted. These evaluations were based on the Draft Guidelines for Threatened Species Assessment (DEC and DPI, 2005) and included consideration of the following items:* • *How is the proposal likely to affect the lifecycle of a threatened species and/or population?* • *How is the proposal likely to affect the habitat of a threatened species, population or ecological community?* • *Does the proposal affect any threatened species or populations that are at the limit of its known distribution?* • *How is the proposal likely to affect current disturbance regimes?* • *How is the proposal likely to affect habitat connectivity?* • *How is the proposal likely to affect critical habitat?* An evaluation for the EECs is included in Sections E3.6.2 and E3.6.3 of the Flora Assessment, Appendix E of the EA. It is considered that the Project would be unlikely to have a significant effect on threatened flora species (i.e. *Zannichellia palustris*) or EECs (i.e. Coastal Saltmarsh in NSW North Coast, Sydney Basin and South East Corner Bioregions and Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner Bioregions). Specifically, it is considered that the Project is not likely to affect the lifecycle and habitat of threatened flora species, the habitat of EECs, or to affect current disturbance regimes, habitat connectivity or critical habitat. Targeted surveys for *Zannichella palustris* were conducted during a particularly hot summer, as stated in Section E3.2

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			of the Flora Assessment, Appendix E of the EA: *This is not the most ideal time to sample for this species because it dies back in summer (Winning, 1996; NSW Scientific Committee, 2004a; DEC, 2005a). Despite this, Zannichellia palustris was recorded by the Project surveys.* Many areas across the study site offer potential habitat for *Zannichellia palustris* (Section E3.2 of the Flora Assessment, Appendix E of the EA). These areas were mapped and included in the Flora Assessment as potential habitat for *Zannichellia palustris* as stated in Section E3.6.1 of the Flora Assessment, Appendix E of the EA: *Potential habitat for Zannichellia palustris in the Project site and surrounds has recently been mapped by Connell Hatch (2006b). Known and potential habitat for Zannichellia palustris would be disturbed by the Project (i.e. habitat in Ponds H, K and Deep Pond [Attachment E-E]). However, potential habitat in Ponds A, J, L, AD, C, T, F and I would not be directly disturbed for the Project. Other nearby known and potential habitat for this species includes Ironbark Creek and tributaries at Shortland and Wallsend, in Black Creek at Cessnock and areas near Belmont (NSW Scientific Committee, 2004a).* As stated in Section E3.6.1 of the Flora Assessment, Appendix E of the EA, the Project is located within the northernmost population of known *Zannichellia palustris* populations: *Although Zannichellia palustris has a cosmopolitan distribution (Greenwood and DuBowy, 2005), the species is known in Australia only from the lower Hunter Region in NSW and the Murray River in South Australia (NSW Scientific Committee, 2004a). The distribution of Zannichellia palustris in the southern hemisphere is limited to coastal areas (Greenwood and DuBowy, 2005).* *Considering the above, the Project site is located within the known distribution of Zannichellia palustris and may represent the most northern distributional limit for this species.*
22	Ecology	Concern was raised regarding the potential impact of the Project on two recently discovered short range endemic camaenid land snail species located in the Wybong – Denman area.	As stipulated by the Project Environmental Assessment Requirements (EARs) issued by the Director-General of the DoP on 26 April 2006, a Fauna Assessment, Appendix F of the EA was prepared for the EA in accordance with the *Draft Guidelines for Threatened Species Assessment*[5]. These guidelines identify important factors that must be considered when assessing potential impacts on threatened species, populations, or ecological communities, or their habitats for development applications assessed under Part 3A of the *Environmental Planning and Assessment Act, 1979* (EP&A Act). The camaenid land snails listed under the NSW *Threatened Species Conservation Act, 1995* (TSC Act) and Commonwealth EPBC Act have distributions which do not include the Project site. Notwithstanding the above, the

[5] DEC and DPI (2005) *Draft Guidelines for Threatened Species Assessment.*

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			general environmental management measures proposed for the Project would also be relevant to these and other snail species.
23	Ecology	General concerns were raised regarding the potential impact of the Project on threatened flora and fauna species.	To assist in identifying whether Project is likely to have a significant effect on threatened flora and fauna, an evaluation of the potential impacts of the Project was undertaken. The Flora and Fauna Assessments were prepared in association with (i.e. co-authored by) Professor David Goldney. As stated in the Flora Assessment (Section E2.4) and Fauna Assessment (Section F2.4), in Appendix E and F of the EA, respectively: *… evaluations were based on the Draft Guidelines for Threatened Species Assessment (DEC and DPI, 2005) and included consideration of the following items:* • *How is the proposal likely to affect the lifecycle of a threatened species and/or population?* • *How is the proposal likely to affect the habitat of a threatened species, population or ecological community?* • *Does the proposal affect any threatened species or populations that are at the limit of its known distribution?* • *How is the proposal likely to affect current disturbance regimes?* • *How is the proposal likely to affect habitat connectivity?* • *How is the proposal likely to affect critical habitat?* Evaluations for threatened species are included in Section E3.6 of the Flora Assessment, Appendix E of the EA and in Section F3.6 of the Fauna Assessment, Appendix F of the EA. It is considered that the Project would be unlikely to have a significant effect on threatened flora and fauna species (Section ES3.4 of the EA). Specifically, it is considered that the Project is not likely to affect the lifecycle or habitat of threatened flora and fauna species or to affect current disturbance regimes, habitat connectivity or critical habitat.
24	Ecology	Concerns were raised regarding the adequacy of the proposed compensatory habitat with respect to: • the existing Big Pond Habitat Offset Scheme; • the Green and Golden Bell Frog; • EECs;	Proposed compensatory habitat creation is stated in Section 4.9.4 of the EA: *Offsets have already been proposed by the NSW government for the development of Big Pond by the Department of Commerce as part of the BPHOS (Big Pond Habitat Offset Scheme) Report (Department of Commerce, 2005). The BPHOS Report proposes to enhance and create compensatory habitats in the Kooragang Nature Reserve to offset the proposed development of Big Pond (Department of Commerce, 2005). …* *Habitat creation for the Green and Golden Bell Frog and shorebirds/saltmarsh would be funded as part of the Project.*

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		• the timing of compensatory habitat establishment; • the suitability of compensatory habitat initiatives for Project impacts; • the location of compensatory habitat; and • proposed contributions to the Kooragang Wetlands Rehabilitation Project. Further concerns were raised that compensatory habitat should not justify the loss of existing habitat with particular reference to "*Draft Lower Hunter Conservation Issues Paper*" (NPWS, 2002).	*A financial contribution would be made towards current or future projects which involve habitat creation for the Green and Golden Bell Frog on RLMC-owned lands within the KWRP or alternate suitable lands in the Kooragang Nature Reserve. Habitat creation would be located on the perimeter of existing habitat areas to provide suitable habitat into which the existing Green and Golden Bell Frog population can expand. This habitat creation would also create an opportunity to research the performance of alternative types of habitat enhancement.* *Habitat creation initiatives for the Green and Golden Bell Frog would include construction of two habitat ponds of similar scale and detail to existing ponds where the Green and Golden Bell Frogs have been recorded on the KIWEF site (i.e. Pond C). This is consistent with the recovery strategies (i.e. habitat rehabilitation/restoration and/or regeneration and monitoring) identified by the DEC to help recover the Green and Golden Bell Frog (DEC, 2005d).* *Mangroves in the Hunter Estuary have been expanding at the expense of the Coastal Saltmarsh EEC and, in some areas (e.g. Ash Island), mangroves have been removed to enhance habitat for Coastal Saltmarsh EEC and shorebirds. A financial contribution would be made to an organisation such as the KWRP for the removal of up to 6 ha of mangroves from coastal saltmarsh habitat. A financial contribution would also be made towards the construction of a flow control structure to minimise the potential for mangrove propagules to enter areas reserved for saltmarsh. Alternatively, these initiatives may also be applied to lands within the Kooragang Nature Reserve. These works are expected to enhance habitat for shorebirds as well as provide habitat for the Coastal Saltmarsh EEC.* *In addition, habitat in the form of shallow areas for foraging shorebirds would be created during the construction of the northern rail spur embankment, if required to be installed when the Project is fully developed to 66 Mtpa, by modifying the design of the embankment batter slopes to have a gentle toe gradient (i.e. in the submerged zone of the batter slope). This would result in the creation of shallow areas suitable for shorebirds in Deep Pond. The specifications of this initiative would be detailed in the FFMP.* Further, it is stated in Section 4.9.4 of the EA: *A financial contribution would be given to the Hunter Wetlands Centre towards an annual exhibition regarding the Green and Golden Bell Frog and migratory shorebirds. The exhibition would include an update on the progress and the effectiveness of the habitat enhancement initiatives conducted as part of the compensatory measures of the Project. This would also provide an opportunity for a representative undertaking the university-based research described above to explain the progress/findings of the research to the interested public.* *This is consistent with one of the recovery strategies (i.e. community and land-holder liaison/awareness*

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			and/or education) identified by the DEC to help recover the Green and Golden Bell Frog (DEC, 2005d). Two frog specialists (Associate Professor Michael Tyler and Doctor Arthur White) were commissioned as peer reviewers of the assessment. The specialists concur with the findings of the EA assessment and stated (Attachment 3 in the EA): *… based on the mitigation and compensatory measures presented therein, I am of the opinion that the Project is unlikely to have a significant effect on threatened frog species including the Green and Golden Bell Frog.* Green and Golden Bell Frog habitat creation is consistent with the recovery strategies identified by the DEC to help recover the Green and Golden Bell Frog (DEC, 2005 *Green and Golden Bell Frog – Priority Actions*). As stated in the Draft Statement of Commitments (Section 5 of the EA), Green and Golden Bell Frog habitat would be created on the perimeter of existing habitat areas to provide suitable habitat into which the existing population can expand. As noted above, a key component of the offset strategy is contributions to the Kooragang Wetland Rehabilitation Project (KWRP) for specific habitat creation initiatives. The KWRP covers approximately 1,590 hectares in the Hunter River estuary. The KWRP describes rehabilitation activities undertaken to date as follows[6]: *Our work in the Hunter River estuary concentrates on improving the health and extent of fisheries and other wildlife habitat that has been degraded or lost in the estuary over the past 200 years. To do this, we manage water and water flows and restore native vegetation on three sites in the Hunter River estuary. We also endeavour to conserve threatened species, manage pests and demonstrate suitable agricultural techniques for managing our wetlands. We use applied research to help assess, monitor and guide management activities. In addition to our habitat work, we are restoring various heritage sites and creating facilities to help manage our wetlands and improve the experience and appreciation of wetlands by our visitors.* *We have altered water flows and ground levels to restore vegetation in some low-lying areas. We have also restricted cattle and vehicle access to these areas by use of bollards and appropriate fencing. This has greatly improved the health of mangroves and saltmarsh alike.* <u>The detailed design and implementation of the compensatory and habitat creation measures described in Sections 4.9.4 and 4.9.5 of the EA would commence from the date of Project Approval in parallel with the construction and operation of the Project.</u>

[6] Website: http://www.hcr.cma.nsw.gov.au/kooragang/. Date accessed 28/9/06.

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			The National Parks and Wildlife Service (NPWS) do not hold a copy of the Draft Lower Hunter Conservation Issues Paper[7]. The DEC has advised that the paper is not a publicly available document and did not progress from the draft stage[8].
25	Ecology	Concerns were raised regarding the potential disturbance of Australasian Bittern habitat.	Section F3.6.2 of the Fauna Assessment, Appendix F of the EA provides an assessment of the potential impacts of the Australasian Bittern: *Known and potential Australasian Bittern habitat is located in the Project disturbance areas. Potential habitat for the Australasian Bittern was mapped by Connell Hatch (2006b) (Attachment F-I). In particular, Project disturbance to habitat would include Ponds P and Q and Big Pond which would be fully infilled and Ponds H and K and Deep Pond which would be partially disturbed. However, most of the known and potential habitat for the Australasian Bittern across the Project site and surrounds would not be directly disturbed by the Project (i.e. Ponds A, AC, J, L, AD, O, S, B, I, C, D, E, V, U, W, Y, T, F, G and AA) (Attachment F-I).* *As previously mentioned, other nearby occurrences of Australasian Bittern habitat include Hexham Swamp NR and Kooragang NR.* *A number of mitigation measures are proposed as part of the Project in relation to the management of Australasian Bittern habitat (Sections F4.2). Based on the above (i.e. small amount of habitat disturbance and availability of proximal habitat external to the Project disturbance areas), it is considered that the Project would not have a significant impact on the locally available habitat for the Australasian Bittern.*
26	Ecology	Concerns were raised in regard to the monitoring of birds, including: • the purpose and use of monitoring results; • the communication of monitoring results to stakeholders; and • site access arrangements for the continuation of	Bird monitoring results would be summarised and included in the Annual Environmental Management Report which would be distributed to relevant government agencies and stakeholders, and copies provided to other interested parties if requested. As stated in Section 4.9.5 of the EA: *Annual monitoring of the Green and Golden Bell Frog, Australasian Bittern and shorebirds would be undertaken in the area surrounding the Project for the Project duration. The objective of monitoring would be to collect up-to-date information on the use of the Project site and surrounds by fauna.* Access to Deep Pond is currently restricted to the public and is managed by RLMC. The existing Delta Access Road would remain for the continuation of access to Deep Pond. If the Project is approved, NCIG will undertake ongoing monitoring of the usage of the site by birds. NCIG will consult with relevant stakeholders in regard to making this monitoring data available to interested parties.

[7] NPWS (2002) *Draft Lower Hunter Conservation Issues Paper.*
[8] DEC, pers. comm., 27/09/2006.

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		monitoring of Deep Pond.	
27	Ecology	Concerns were raised that a Flora and Fauna Management Plan (FFMP) should have been included in the EA.	A FFMP would be developed for the Project prior to construction as stated in the Draft Statement of Commitments (Section 5 of the EA) and would include management measures to be undertaken during construction and operation: *A FFMP will be prepared prior to Project construction and will include management measures to be undertaken during construction and operation, including a Vegetation Clearance Protocol (VCP) and Threatened Species Management Protocol (TSMP). In addition, the FFMP will describe landscape plantings, pest management measures, weed management measures, on-site amphibian chytrid fungus management measures, rail culvert modification and fauna monitoring programmes. Further details regarding the FFMP are provided below.* *The FFMP will include a VCP to minimise the potential impacts of vegetation clearance on fauna. During construction, vegetation immediately adjoining the Project disturbance areas (including the Freshwater Wetlands on Coastal Floodplains EEC and the Coastal Saltmarsh EEC) will be delineated and clearly marked to minimise the potential for accidental damage during construction. The VCP will also include a pre-clearance survey, identification of fauna management strategies and specific procedures for vegetation clearance.* *A TSMP will be developed as a component of the FFMP to facilitate the implementation of threatened species management strategies to minimise potential impacts on threatened fauna species.* *Green and Golden Bell Frogs found in the Project site during construction or operation will be removed from the direct disturbance area and placed in adjacent suitable habitat in accordance with the Hygiene Protocol for the Control of Disease in Frogs (NPWS, 2001) which recommends best-practice procedures for handling frogs and suggests strategies for minimising the potential of spreading amphibian chytrid fungus.* *Habitat in the form of shallow areas for foraging shorebirds would be created during the construction of the northern rail spur embankment (if required to be built) by modifying the design of the embankment batter slopes to have a gentle toe gradient (i.e. in the submerged zone of the batter slope). This would result in the creation of shallow areas suitable for shorebirds in Deep Pond. The specifications of this initiative would be detailed in the FFMP.* *Monitoring of the Green and Golden Bell Frog, Australasian Bittern and shorebirds will be undertaken in the area surrounding the Project annually for the duration of the Project. The objective of monitoring will be to collect up-to-date information on the use of the Project site and surrounds by fauna. Monitoring data for the Green and Golden Bell Frog will be provided to university institutions undertaking relevant research on the*

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			Green and Golden Bell Frog.
28	Ecology	Concerns were raised with respect to the literature referenced in the Flora and Fauna Assessments.	The methods used to obtain information for the Flora Assessment included a literature review, database searches and field surveys (Section E2 of the Flora Assessment, Appendix E of the EA). The Flora and Fauna Assessment literature reviews included Environmental Impact Statements (EISs), reports prepared for government departments and scientific literature (Section E2.1 of the Flora Assessment, Appendix E of the EA and Section F2.1 of the Fauna Assessment, Appendix F of the EA). The reports reviewed for the Flora Assessment included but were not limited to the 11 documents described in Section E2.1 of the Flora Assessment, Appendix E of the EA. The reports reviewed for the Fauna Assessment included but were not limited to the 13 documents described in Section F2.1 of the Fauna Assessment, Appendix F of the EA. EISs and reports dealt with areas within the Project site. Scientific literature also provided information on areas immediately adjacent to and surrounding the Project site.
29	Other (Mining Development)	Concerns were raised that the Project would facilitate an increase in Hunter Valley coal exports and increased development of NSW coal projects and the EA does not assess the potential environmental impacts of these other developments.	The EA does not seek approval for any mining operations, hence does not assess any new coal mine proposals or expansions. Such proposals are subject to separate environmental assessments and any approval requirements being met by the individual mine owners. The Executive Summary in the Socio-Economic Assessment, Appendix G of the EA, stated that: *Strong increases in world demand, especially by China and India, have led to sharp increases in the price for coal. However, the ability to export coal relies on the capacity of the coal supply chain to handle current and future output from mines.* *Currently there is substantial pressure on the Hunter Valley coal supply chain, including the Hunter Valley Port Facility and the rail network. Bottlenecks in the supply chain are constraining the production and export of coal. If these can be overcome, coal exports from the Hunter Valley are expected to grow.* *Australian Rail Track Corporation (ARTC) is currently proposing upgrades to the capacity of the Hunter Valley rail corridor, with the planned enhancement program to move system capacity ahead of anticipated demand (ARTC 2005).* Section G3.6 in the Socio-Economic Assessment, Appendix G of the EA stated: *If the Project and ARTC upgrades of rail infrastructure are not approved and the existing capacity restrictions in the Hunter Valley coal supply chain remain, then coal exports would be constrained and there would be an opportunity cost to society of between approximately $700M and $6,000M, net present value (NPV) on the basis of the ABARE (2005) and ARTC (2006) export demand predictions.*

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			… *While there is considerable uncertainty around future coal prices and export demand, it is evident that there are potentially very significant net production benefits to the NSW and Australian economies that will be foregone, due to coal supply chain capacity constraints. Approval of the Project with maximum capacity flexibility would ensure that port capacity constraints are removed and NSW and Australia can capture the economic benefits of meeting increasing world coal demand.*
30	Other (Surface water, land contamination and fishing)	Concerns were raised with respect to: • the dredging of a large volume of sediment from the south arm of the Hunter River including known contaminated sediment and potential use of contaminated sediment as pre-loading material; • the potential impact of dredging on the fishing industry, marine species, human health and water flows and levels (and ecological communities susceptible to water level changes); • assessment of the potential environmental impacts from the use of material from dredging operations at the Project site for pre-loading and	Dredged material would be sourced from approved dredging activities as stated in Section 3.6.2 of the EA: *Sufficient clean (uncontaminated) dredge material is available from the approved dredging of the south arm of the Hunter River to meet the fill requirements for development of the Project. The NSW Maritime Authority has agreed to provide the necessary fill material to the Project. Once removed from the south arm of the Hunter River, remediation of the contaminated sediments would be undertaken as a separate activity by BHPB and would not provide an impediment to the development of the Project. No remediated material produced during Stage 1 or Stage 2 of the implementation of the Port Consent would be utilised as Project pre-loading or construction fill.* Dredged material that is sourced from the south arm of the Hunter river would be used for the preloading and construction of the coal storage area (approximately 4 million m^3); construction of rail embankments (approximately 575,000 m^3); and construction of the wharf structure (approximately 400,000 m^3) (Section 2 of the EA). Validation sampling and testing of the dredged material to confirm its suitability for use would be progressively undertaken during its initial deposition in the coal storage area; use for preloading and construction of the coal storage area; rehandling for construction of the rail embankments; and construction of the berths and wharf structure. Hence, dredged material identified as contaminated would not be used as pre-loading or construction fill material for the Project. As stated in Section 3.6.1 of the EA: *The NSW Maritime Authority holds a development consent (DA-134-3-2003-i) granted to it by the Minister on 9 August 2005 for the Extension of Shipping Channels within the Port of Newcastle (including dredging, excavation, treatment and disposal of sediments from the south arm of the Hunter River) (the Port Consent).* *The dredging of the south arm of the Hunter River adjoining to and on the Project site is not assessed in this EA and does not form part of this Project. …* *NCIG would implement the Port Consent where it is relevant to the Project. The Project is consistent with the Port Consent which has been assessed in an Environmental Impact Statement (EIS) (Proposed Extension of Shipping Channels, Port of Newcastle Environmental Impact Statement [Waterways Authority, 2003]) (Port*

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		construction fill; and • the management of groundwater in the coal stockpile areas.	*Consent EIS), which provides as follows:* *"The South Arm has been identified as the most suitable location for port expansion in Newcastle, mainly because of the South Arm's proximity to transport infrastructure, its lower potential for significant environmental impacts (particularly in the Kooragang Nature Reserve) and its more passive hydraulic characteristics (compared to the North Arm of the Hunter River)."* *The dredging of the south arm of the Hunter River for the purposes of providing deep water access to future berth sites at the Project wharf is assessed in the Port Consent EIS and is not assessed further in this EA.* As stated above, the impact of dredging was assessed in the Port Consent EIS and subsequently approved, therefore the potential impacts of dredging on the fishing industry in the Newcastle Harbour does not require assessment in the EA. As part to the Proposed Extension of Shipping Channels, Port of Newcastle EIS (Waterways Authority, 2003), a Tidal Hydrodynamic Study was undertaken by NPC. The study found that there is "…virtually no effect on tidal planes in the estuary as a result of the proposed dredging". Potential environmental impacts from the use of fill from dredging activities are assessed in Section 4.7.2 of the EA: *As described in Section 2.5.1, preloading would be undertaken as part of the construction of the coal storage area to provide for consolidation of the existing soils.* *…* *Notwithstanding the above, bores would be located around the perimeter of Site A1 to monitor the fill and estuarine aquifers as part of the SWGMP (Section 5).* *If groundwater monitoring indicates the need, an investigation would be undertaken and additional/contingency control measures would be developed in consultation with the relevant authorities, including measures such as:* • *pumping from bores to intercept migrating groundwater;* • *localised subsurface low permeability barriers around affected areas (i.e. a physical barrier to groundwater migration in potentially affected areas); and* • *subsurface low permeability barrier around the perimeter of Site A1 (i.e. a physical barrier to groundwater migration from the coal storage area).*

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			The above measures are consistent with the design goal of no discharge of water to the Hunter River. The detailed design of these controls would take into consideration the results of the detailed geotechnical and geochemical investigations to be undertaken as part of the detailed design of the Project. *As described in Section 2.4, Sites D1 and D2 would contain Project rail infrastructure. The rail infrastructure predominately requires the placement of fill material over the top of the existing surface to create an embankment. The depth of fill material required varies across Sites D1 and D2, depending on the existing surface level. The placement of the embankment material would cause consolidation of the underlying soils.* *As described above, the consolidation of the clay aquitard would lead to an increase in pore pressure, which would induce flows from the clay aquitard into the fill and estuarine aquifer. This increase in flow would be expected to be short term and localised (Appendix D).* *The Project rail infrastructure corridor would be located in a narrow corridor across the central portion of Sites D1 and D2. The presence of fill materials would assist in dissipating the groundwater pressure from the placement of fill for the rail embankment. The increase in flow rate is expected to be only minor. Consolidation of the alluvial and estuarine sediments is likely to be minimal due to the previous placement of large quantities of fill in this area during the operations of the KIWEF (Appendix D).* The construction material and design of the coal stockpile areas was established by the prefeasibility study conducted for the Project and was subject to the Environmental Risk Analysis, Appendix J of the EA. The management of runoff from the coal storage area is discussed in Section 4.6.3 of the EA: *The coal storage area would be sloped with dedicated drains located along the pads and berms. A sub-grade drainage system would be incorporated into the coal stockpile pads to capture water infiltrating through the coal stockpiles (Section 2.5.1). The sub-grade drainage system would comprise a series of underground drains, pits and transfer pumps for controlling drainage from the coal storage area.* In addition, all site water management structures would be lined with low permeability materials (e.g. compacted clay or geo-membrane) to minimise the potential for leakage (Section 4.6.3 of the EA).
31	Other (Renewable energy)	Concerns were raised with respect to: • consideration of alternative renewable energy options (i.e. wind and solar energy) rather than increasing	The Project comprises the construction and operation of a 66 Mtpa capacity CET to facilitate the unloading of coal from trains, stockpiling of coal and loading of coal to ships for export. The Project does not seek approval for any mining operations nor does it seek approval for the end-use by third party consumers of coal. As such, renewable energy options are not considered “alternatives” for a CET to facilitate the transport of coal. In March 2006, the COAL21 Fund was launched to provide $300 million over the next five years to work with the electricity generation industry to demonstrate promising technologies for reducing greenhouse gas emissions from coal-

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		coal exports; and • the level of investment in renewable/clean coal energy research to reduce emissions or compensate for emissions associated with the Project.	fired power stations. The COAL21 Fund complements and extends the coal industry's existing commitment to greenhouse gas abatement through the COAL21 Program. COAL21 was initiated by the Australian coal industry in March 2003 and is a partnership between Federal and State government agencies, the coal and power industries, the key mining and power sector union and major research organisations. The aim of the COAL21 program is to fully realise the potential of advanced technologies to reduce or eliminate greenhouse gas emissions associated with the use of coal. Two key technologies considered by COAL21 include Integrated Gasification Combined Cycle (IGCC) power generation and Carbon Capture and Storage (CO2 Sequestration).
32	Other (Groundwater)	Concern was raised regarding the potential impact of the Project on the aquifers beneath the Liverpool Plains.	The Liverpool Plains groundwater system is located beneath the Liverpool Plains in regional NSW (Gunnedah and Narrabri areas). The groundwater system is located a significant distance from the NCIG project site and is not connected to the aquifer system of Kooragang Island. Construction and operation of the Project would not impact on the Liverpool groundwater system.
33	Other (EARs and stakeholder consultation)	Concerns were raised regarding the: • scope of the Director-General's Environmental Assessment Requirements (EARs) in particular no requirement in the EARs to address greenhouse gas emissions and accelerated global climate change issues; • community concerns raised during consultation being adequately addressed in the EA; and • evidence to support active "participation" from the proponents of the investigation of	As stated in Section 1.2 of the EA, the EARs were developed by the DoP following a Planning Focus Meeting (PFM): *A Planning Focus Meeting (PFM) for the Project was held on 8 March 2006. The objective of the PFM was to familiarise government stakeholders with the development proposal and to facilitate identification and consideration of environmental and other issues relevant to the Project. From this consultation, DoP developed the EARs for the EA (Attachment 1).* The EARs were issued in accordance with the requirements of Part 3A of the EP&A Act and Part 1A of the EP&A Regulation. The EARs included consultation requirements as follows: *You must undertake an appropriate and justified level of consultation with the following parties during the preparation of the Environmental Assessment:* *…* *The Environmental Assessment must clearly indicate issues raised by stakeholders during consultation, and how those matters have been addressed in the Environmental Assessment.* A Project Stakeholder Focus Group (SFG) was formed on 26 April 2006 to assist with the transfer of information between the local community and NCIG and to provide a forum for constructive consultation regarding the key environmental issues for the Project. The issues discussed by the SFG were wide-ranging as stated in Section 3.7.2 of the EA, including: • *potential noise impacts including construction and operational noise from the Project, noise assessment requirements and criteria, cumulative noise with other industrial developments and noise monitoring and management (Section 4.3 and Appendix A);*

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		concerns raised by stakeholders.	• *potential air quality impacts including concerns about coal dust, applicable air quality guidelines and criteria, application of dust mitigation measures, cumulative air quality issues related to industrial development and air quality monitoring and management (Section 4.4 and Appendix B);* • *potential interaction of the Project with the longer term planned traffic improvements of the NCC and the RTA, management of Project traffic and existing traffic congestion and access to and from the Project site during construction and operations (Section 4.11 and Appendix C);* • *interaction of the Project with the Port Consent and remediation of contaminated sediments in the south arm of the Hunter River (Sections 3.6.1 and 3.6.2);* • *arrangement of the Project rail infrastructure and the potential for it to sterilise the beneficial use of land zoned as port and industrial use (Section 3.9.3);* • *management of potentially contaminated materials on the Project site and the status of the KIWEF (Section 4.7 and Appendix D);* • *water use on-site, water management and the management of potentially contaminated waters (Sections 4.6 and 4.7 and Appendix D);* • *potential visual impacts including siting coal stockpiles in close proximity to Cormorant Road (Sections 3.9.3 and 4.5 and Appendix H);* • *potential socio-economic impacts, including consideration of the broader global issues of greenhouse gas generation and global warming (Sections 4.12 and 4.13 and Appendix G);* • *the Project EA approval process and the roles of government and public stakeholders in the assessment process (Sections 1 and 3);* • *interaction of the Project with the Port of Newcastle (Sections 3.6.1 and 3.7.1);* • *potential impacts of the Project on Aboriginal heritage (Section 4.10);* • *management and monitoring of the Project during construction and operation (Section 4);* • *justification of the need for the Project (Section 3.9); and* • *technical questions regarding the timing, nature and operation of the Project (Section 2).* *These issues were addressed during the conduct of the meetings and/or addressed in relevant sections of this EA as indicated above.* The public, relevant non-government organisations, Federal, State and Local government agencies were consulted with as stated in Section 3.7 of the EA:

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			The level of consultation undertaken is considered to be in accordance with the EARs and is appropriate for the preparation of an EA under Part 3A of the EP&A Act. Consultation has been undertaken with members of the public, relevant non-government organisations, Federal, State and Local government agencies. *The consultation programme has provided an effective avenue to identify issues of concern or interest to stakeholders and to address these issues in the EA document where applicable.* Project greenhouse gas emissions were considered in the EA (see Issue 14). Further, in accordance with the Project EARs, an ERA was undertaken to identify the key environmental risk groups for the construction and operation of the Project. The ERA was conducted on 28 April 2006 and was facilitated by Safe Production Solutions. The ERA is documented in full as Appendix J in the EA. Evidence of participation from NCIG in the investigation of concerns raised by stakeholders is also highlighted in submissions to the EA from two SFG members (names withheld) which stated: 1. *"Chaired by Ms Margaret MacDonald Hill, there was always a representative of the companies involved, and an excellent technical expert to answer questions."* 2. *"The people supplying the information have honestly (in my opinion) investigated any matters brought forward by the SFG and supplied the relevant information."*
34	Other (Heritage)	Concern was raised with respect to the potential impact of the Project on Aboriginal heritage during construction.	A Preliminary Aboriginal Heritage Assessment (PAHA) was undertaken for the EA in accordance with the DEC *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (the Guidelines) (DEC, 2005b). The findings of the PAHA are summarised below from Section 4.10.2 of the EA: • *The Project site is located in the Kooragang Port and Industrial Area. The Port and Industrial Area has been subject to agricultural development since European settlement, and over a period of more than 50 years, dredge spoil disposal, land reclamation and waste disposal activities.* • *Previous surveys within the Project site and Kooragang Port and Industrial Area for recent development proposals have not identified any remaining archaeological evidence of Aboriginal occupation.* • *Consultation with the Aboriginal community for this proposal and previous development proposals has not identified any significant cultural heritage values in the Kooragang Port and Industrial Area.* • *In accordance with the Guidelines, it can be concluded that an Aboriginal Cultural Heritage Assessment of the Project site is not required as:* – *NCIG propose redevelopment of a site where Aboriginal objects have not previously been*

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			found; and – *long term disturbance, extensive land reclamation and waste disposal to landfill has taken place at the site, which indicates there is little likelihood of Aboriginal objects remaining.* Therefore, based on the findings of the PAHA, it is not considered that the Project would have a significant impact on Aboriginal cultural heritage. Notwithstanding, as stated in Section 4.10.3 of the EA: *Notwithstanding the fact that no Aboriginal sites have been identified within the Project site, as a precaution, the Worimi LALC has requested a site monitor be present to facilitate the identification and salvage of any buried artefacts in the unlikely event that any are uncovered during excavation (Attachment 2). The following management framework incorporates the Worimi LALC request:* • *During induction training, NCIG personnel would be advised of their responsibility to advise management if they uncover any item that could be of Aboriginal heritage significance.* • *Project excavation works that are expected to extend into the natural ground surface (i.e. below known fill material) would be monitored by an Aboriginal heritage representative to identify any archaeological material if it is present in the excavated material.* • *If potential archaeological material is identified, based on the significance of the items (as determined by a consulting archaeologist), salvage of a selection of any artefacts may be undertaken in consultation with the DEC.* • *If any archaeological material is salvaged on-site, it would be either stored in a keeping place on-site or provided to the Aboriginal community for safekeeping or educational display.* • *At the cessation of the Project, if any salvaged Aboriginal objects are stored on-site their management would be determined in consultation with the Aboriginal community and the DEC.*
35	Other (Harbour)	Concern was raised with respect to the potential impact of increased harbour traffic (i.e. hydraulic interaction with other berths) and associated ballast water discharge and air and noise emissions.	As noted in the Project Snapshot (Table 1-2, Section 1.2 of the EA), up to approximately 12 ships per week would be loaded as part of the Project. The Newcastle Port Corporation (NPC) administers shipping activities in the Newcastle harbour. The movement of loaded ships and associated ballast water discharge and air and noise generated during shipping movements would be undertaken in accordance with existing NPC approvals and licenses. Consultation with the NPC was undertaken during the development of the EA, as stated in Section 3.7.1 of the EA: *NCIG consulted with the NPC during the feasibility studies and preparation of this EA with respect to its requirements for shipping management and interaction with existing approvals associated with the Port of Newcastle. The NPC attended the Planning Focus Meeting for the Project in March 2006. NCIG has*

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			consulted with the NPC regarding any applicable navigation requirements associated with the Project. This included joint participation in navigation trials in June 2006 (with the Project berth alignment and approved dredging of the south arm of the Hunter River) using a simulation model of the Port of Newcastle at the Australian Maritime College in Launceston, Tasmania. NCIG would continue to work closely with the NPC and other relevant stakeholders with respect to shipping management (including management of hydraulic interaction, ballast water discharge and noise). The Australian Quarantine and Inspection Service (AQIS) is the government agency responsible for the management of ballast water discharged within Australian ports. The discharge of high-risk ballast water from ships is prohibited anywhere inside Australian territorial seas.
36	Other (Project justification and Ecologically sustainable development [ESD])	Concerns were raised regarding: • the need for the Project; • the potential impact of the Project on the regional economy with respect to the resource industry; • potential biodiversity impacts of the Project; • consideration of the objects of the EP&A Act (section 5), with respect to ecologically sustainable development; • consideration of the precautionary principle and the principle of intergenerational equity; and • the benefits to the community as a result	The Project is required to address a projected shortfall in port capacity as export demand for Hunter Valley coal increases (Section 3.9.1 of the EA). Consideration of Australian Bureau of Agricultural and Resource Economics (ABARE) studies and ARTC coal supply and demand scenarios indicate that the ability for coal producers to meet potential export demand through the Port of Newcastle is expected to be constrained if the Project were not to be developed (Section 3.9.1 of the EA). The Project is predicted to have an impact on a wide range of sectors in the Newcastle Statistical Subdivision (SSD) and NSW economy as stated in Section 4.12.2 of the EA: *The main sectors impacted by the operation of the Project are likely to be the agricultural, mining and lifting and material handling machinery manufacturing sector; electricity supply sector; wholesale trade sector; retail trade sector; other property services sector; mechanical repairs sector and other construction sector.* ESD considerations are described in Section 3.9.4 of the EA and include the application of the principles of ESD to the Project (e.g. precautionary principle, social equity, conservation of biological diversity and ecological integrity, and valuation). The conservation of biodiversity and ecosystem integrity is addressed in Section 3.9.4 of the EA, as follows: *Biological diversity or 'biodiversity' is considered to be the number, relative abundance, and genetic diversity of organisms from all habitats (including terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are a part) and includes diversity within species and between species as well as diversity of ecosystems (Lindenmayer & Burgman, 2005). For the purposes of this EA, ecological integrity will be considered in terms of ecological health and ecological values.* *The Project site has recognised ecological values, which include threatened flora and fauna species as well as Endangered Ecological Communities (EECs). Overall, however, the Project site is considered to be*

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		of the Project.	*disturbed and dominated by exotic weed species (Appendix E). The terrestrial, saline and freshwater communities within the Project site are currently undergoing successional changes in response to historical land use.* *Overall, the ecosystem processes operating within the Project site are considered to be sub-optimal (Appendix F). The production of resources to other organisms is considered to be sub-optimal because the Project site is highly disturbed (D. Goldney, pers. comm., 2006). The existing flora and fauna species richness (i.e. total number of species) present in the Project site is relatively low with the exception of the birds which were recorded at Deep Pond.* *The environmental assessments described in Sections 4.8 and 4.9 (and Appendices E and F) describe the potential impacts of the Project on the biological and ecological environment. In accordance with ESD principles, the Project addresses the conservation of biodiversity and ecological integrity by proposing an environmental management framework designed to conserve ecological values where practicable.* *Project infrastructure would be designed to minimise impacts on the existing environment where practicable. For example, dust controls would be employed to minimise potential impacts on surrounding vegetation. Further details of how the Project infrastructure would be designed to minimise impacts on the environment, including potential impacts on threatened species, are provided in Sections 4.8 and 4.9.* *Proven operating systems and pollution control structures would be applied where practicable. The potential for environmental degradation would be minimised through training of personnel, environmental auditing and the development of contingency plans in case of an emergency which is likely to impact on the environment. Environmental monitoring would be undertaken to determine whether the environmental control measures are operating effectively. Further details of environmental management and monitoring are provided in Section 4.* *The Project includes a programme of compensatory measures to address on-site impacts. The existing compensatory habitat proposed by the NSW Government (e.g. Big Pond Habitat Offset Scheme) was taken into consideration during development of these compensatory measures. The Project would contribute towards habitat enhancement/creation for flora and fauna as well as towards research into relevant threatened species. Contributions would also be made to the KWRP and other non-government organisations for relevant environmental management and research. Further discussion of the compensatory measures is provided in Sections 4.8.4 and 4.9.4.* *It is recognised that the nominal conservation values existing within the Project site can be enhanced only minimally given the degraded condition of the existing environment. However, greater ecological resilience can be built into the surrounding areas by the application of the Project initiatives, thereby enhancing biodiversity and ecological integrity. Accordingly, the Project would enable inter-*

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			generational wealth to be utilised to improve adjacent environments using the compensatory measures detailed above. ESD is defined in section 6(2) of the *Protection of the Environment Administration Act, 1991*, which is the definition adopted by the *Environmental Planning and Assessment Act, 1979*. This definition includes the precautionary principle and intergenerational equity (also referred to as social equity). Section 3.9.4 of the EA addresses ESD considerations, including the precautionary principle and social equity. The results of these considerations with respect to the precautionary principle are stated in Section 3.9.4 of the EA: *Environmental assessment involves predicting what the environmental outcomes of a development are likely to be. The precautionary principle reinforces the need to take risk and uncertainty into account, especially in relation to threats of irreversible environmental damage.* *…* *The specialist assessments, PHA* (Preliminary Hazard Analysis) *and ERA* (Environmental Risk Analysis*), have evaluated the potential for harm to the environment associated with development of the Project and have identified measures that can be implemented to minimise harm where practicable. An extensive range of measures have been adopted as components of the Project design to minimise the potential for serious and/or irreversible damage to the environment, including the development of environmental management and monitoring and compensatory measures that would be implemented during construction and operation of the Project (Section 4). Where residual risks are identified, contingency controls have been considered.* Social equity is also specifically addressed, as follows (Section 3.9.4 of the EA): *The principles of social equity are addressed through:* • *assessment of the social impacts of the proposal, including the distribution of impacts between stakeholders (Appendix G);* • *management measures to be implemented in relation to the potential impacts of the Project during construction and operation on land resources (land contamination), water resources, visual amenity, noise, air quality, flora and fauna, transport, hazards and risks and socio-economics (Section 4);* • *implementation of environmental management and monitoring initiatives (Section 4) to minimise potential environmental impacts (which include environmental management and monitoring programmes covering the Project life); and* • *implementation of a programme of compensatory measures during the life of the Project to compensate for potential ecological impacts that have been identified for the on-site development.*

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			The socio-economic benefits of the Project are assessed in the Socio-Economic Assessment, Appendix G of the EA, and are summarised in Section ES4 of the Executive Summary of the EA as follows: *The Project would provide an average of 400 and up to 500 direct full time construction jobs for a period of some 33 months during initial construction and would provide 100 direct jobs when operating at full capacity (66 Mtpa). The life of the Project is likely to extend for a significant term (i.e. until global demand for Hunter Valley coal is reduced, or the ability of mining companies to produce coal is significantly constrained).* *Employment and expenditure associated with the Project is also predicted to have significant flow-on effects in the regional economy. The Socio-Economic Assessment (Appendix G) has indicated the development of the Project, together with other capacity improvements in the Hunter Valley coal supply chain to meet export demand, would provide net production benefits between approximately $700 million (M) and $6,000 M over an assessment period of 30 years.* *These very significant economic benefits to Australia (and the State of NSW) would be forgone if Hunter Valley coal supply chain capacity constraints are not addressed to allow coal producers to meet export demand.* *In particular, the Project would benefit current and future generations through the generation and maintenance of employment (direct employment of up to 500 people during construction of the Project and 100 people during Project operations). Flow-on employment effects, particularly during Project operations would also be significant (Appendix G).*
37	Other (Land contamination and groundwater)	Concerns were raised with respect to the Land Contamination and Groundwater Assessment, including: • access to referenced documents; • further detailed contamination investigations, management and reporting;	Section 12 of the Land Contamination and Groundwater Assessment, Appendix D of the EA was prepared by RCA Australia and provides a full list of documents referenced in the Land Contamination and Groundwater Assessment. A copy of the referenced documents can be made available to interested parties if requested. A Soil and Excavation Management Plan (SEMP) <u>including the outcomes of further detailed geotechnical and geochemical investigations</u> would be developed for the Project as stated in the Draft Statement of Commitments (Section 5 of the EA): *A SEMP will be developed for the Project detailing methods for the management of contaminated soils and water. The SEMP will be prepared prior to the development of the Project and will incorporate the outcomes of a detailed geotechnical and geochemical investigation undertaken as part of the detailed design of the Project. A description of the detailed design of these controls will be included in the SEMP.* *The SEMP will describe the measures to control contaminated soils and dust generation/volatilisation*

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		• remedial action plans; • validation reports; • implementation of an ongoing surface/ groundwater monitoring plan; and • completion of a site audit to determine the suitability of the site.	*potential. These measures will include:* • *using water sprays to control dust;* • *minimising the surface area disturbed by excavation at any one time;* • *confining vehicle movements to designated access routes;* • *limiting the speed of vehicles on unpaved roads; and* • *immediate encapsulation of materials considered unsuitable for use as construction fill.* *The SEMP will detail the management procedures for acid sulphate soils should they occur on the site. The SEMP will provide measures for the control of acid sulphate soils such as lime dosing if necessary.* A Surface Water and Groundwater Monitoring Programme (SWGMP) would be developed for the Project and would include ongoing surface and groundwater monitoring as stated in the Draft Statement of Commitments (Section 5 of the EA): *A Surface Water and Groundwater Monitoring Programme (SWGMP) will be developed for the Project as part of the water management system and will be detailed in the SWMP. The monitoring programme will include:* • *monthly sampling at a network of surface water and groundwater quality monitoring sites;* • *analysis of groundwater samples for a range of parameters including, but not necessarily limited to groundwater level, pH, electrical conductivity (EC), total dissolved solids (TDS), total suspended solids (TSS), sulphate, Total polycyclic aromatic hydrocarbons (PAH) and a suite of metals;* • *analysis of surface water samples for a range of parameters including, but not necessarily limited to pH, EC, TDS and TSS.* • *data review procedures for analysing surface water and groundwater quality results; and* • *investigation triggers and contingencies for managing potential adverse impacts of the Project on surface water and groundwater quality.* As stated in Section 3.3.3 of the EA, the Land Contamination and Groundwater Assessment concluded that the Project site is suitable for the purpose of the development of the Project: *A Land Contamination and Groundwater Assessment (satisfying the requirements for a preliminary investigation under clause 7[2]) was conducted as part of the preparation of this EA in accordance with Managing Land Contamination - Planning Guidelines SEPP 55 – Remediation of Land as required in SEPP*

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			55 and is presented in Appendix D. The assessment concluded that the Project site, once appropriate environmental management measures have been implemented, would be suitable for the purpose of the development of the Project (Appendix D).
38	Other (Tourism)	Concern was raised with respect to the Project's potential impact on the Hunter Valley's tourist and wine industries.	The CET would be located on Kooragang Island, in Newcastle on lands designated Zone 4(b) (Port and Industry), Zone 5(a) (Special Uses Zone – Arterial Road) and an unzoned area (Hunter River) under the Newcastle LEP. The Project is not proximal to any known infrastructure associated with the Hunter Valley tourism or viticultural (wine) industries. The EA does not assess any new coal mine proposals and does not seek approval for any mining operations. Such proposals would be subject to separate environmental assessment and approvals being obtained by the individual mine owners.
39	Other (Local impacts)	Concern was raised with respect to potential local pollution impacts of the Project on Hunter citizens.	The EA provides an assessment of the following potential impacts on the local environment: • land resources (landuse, landform and erosion impacts) (Section 4.1 of the EA); • noise impacts (Section 4.3 of the EA); • air quality impacts (Section 4.4 of the EA); • visual impacts (Section 4.5 of the EA); • surface water impacts (Section 4.6 of the EA); and • groundwater and land contamination impacts (Section 4.7 of the EA). Mitigation, management measures and monitoring would be undertaken as described in the Section 4 of the EA to prevent, minimise and manage such potential impacts. The Air Quality Impact Assessment and Construction, Operation and Road Transport Noise Impact Assessment include consideration of the amenity of residents in near-by localities with respect to potential air and noise impacts. The assessments indicated that relevant intrusive and amenity criteria (Construction, Operation and Road Transport Noise Impact Assessment) and air quality goals (Air Quality Impact Assessment) would be met by the Project.
40	Other (Land contamination and groundwater)	Concern was raised with respect to potential for the release of contaminants from the Project site.	The potential for release of contaminated water or sediment as a result of the Project was identified in the ERA, Appendix J of the EA as a key potential environmental issue. Subsequent to this, a comprehensive system of management measures was developed by NCIG. Management measures proposed include the following (Section ES3.3.2 of the EA): • Soil management during excavation. • Water management during excavations. • Groundwater management during preloading of the coal storage area and the rail infrastructure corridor.

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			• Soils and Excavation Management Plan (SEMP). • Surface Water and Groundwater Monitoring Programme (SWGMP). Section ES3.3.2 of the EA details the management measures described above: *Prior to any excavation on site, a representative surface and sub-surface soil sampling and analysis programme would be undertaken in order to characterise the material to be excavated in accordance with the EPA Guidelines for the Assessment, Classification and Management of Liquid and Non-Liquid Waste.* *Materials that are identified as not being suitable for use as fill material on site would be excavated and removed from the site to adjacent RLMC owned land. The material would be placed in encapsulated cells and capped with an appropriate cover layer in accordance with Benchmark techniques 1 and 2 in the EPA Environmental Guidelines: Solid Waste Landfills.* *The presence or otherwise of acid sulphate soils would be identified during the surface and sub-surface soil sampling and analysis and management such as lime dosing of soils would also be undertaken if necessary.* *To manage the risk of human exposure to contaminated materials (including airborne particles) during excavation activities a range of controls would be implemented in accordance with the SEMP as described in Section ES3.1.* *Any water that accumulates in excavations during Project construction would be tested to determine its quality. Depending on the quality of this water it would be pumped to dedicated detention ponds or (if the water quality is suitable) pumped to the primary and secondary settling ponds for storage on-site and re-use.* *Water that is considered to be of unsuitable quality for re-use would be temporarily stored within dedicated detention ponds with low permeability liners (e.g. compacted clay or geo-membrane) before being treated for re-use and/or removed from site and disposed of by a licensed contractor.* *Preloading would be undertaken as part of the construction of the coal storage area to provide for consolidation of the existing soils. Wick drains would be used to accelerate consolidation. Wick drains assist in expediting the consolidation process by providing a conduit for groundwater movement.* *Bores would be located around the perimeter of Site A1 to monitor the fill and estuarine aquifers as part of the surface water and groundwater monitoring programme. If groundwater monitoring indicates the need, an investigation would be undertaken and additional/contingency control measures would be developed in consultation with the relevant authorities, including measures such as:*

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			• *pumping from bores to intercept migrating groundwater;* • *localised subsurface low permeability barriers around affected areas (i.e. a physical barrier to groundwater migration in potentially affected areas); and* • *subsurface low permeability barrier around the perimeter of Site A1 (i.e. a physical barrier to groundwater migration from the coal storage area).* *The rail infrastructure predominately requires the placement of fill material over the top of the existing surface to create an embankment. The depth of fill material required varies across Sites D1 and D2, depending on the existing surface level. The placement of the embankment material would cause consolidation of the underlying soils.* *As described above, wick drains would be used to accelerate consolidation in the clay aquitard in areas of significant fill.* *Bores would be located along the perimeter of the rail infrastructure corridor to monitor the fill and estuarine aquifers as part of the surface water and groundwater monitoring programme.* *In addition to the mitigation and management measures described in the previous sections, the Project rail infrastructure corridor has been designed with a capping system to minimise long-term infiltration (Figure ES-15).* *A SEMP would be developed for the Project detailing methods for the management of contaminated soils and water. The SEMP would be prepared prior to the development of the Project and would incorporate the outcomes of a detailed geotechnical and geochemical investigation undertaken as part of the detailed design of the Project.* *The performance of the mitigation and management measures would be monitored by the surface water and groundwater monitoring programme as detailed in the SWMP.* *The detailed design of the surface water and groundwater monitoring programme would consider the proposed groundwater controls and the results of the detailed geotechnical and geochemical investigation undertaken as part of the detailed design of the Project.* *RCA Australia concluded that with the implementation of the mitigation, management and monitoring measures proposed (including the surface and groundwater monitoring programme and the SEMP) the Project site is suitable for the purpose of development of the Project.*

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41	Other (Surface water)	Concern was raised with respect to: • the use of potable water as Project water supply; • the potential impact of the Project on flooding; • Project stormwater management; • the continuation of current waterflows between ponds to maintain habitats; and • the efficacy of settling ponds during large rainfall events.	Project water supply requirements are stated in Section 2.8.2 of the EA: *Water supply requirements during operation of the Project would be met from stormwater contained on-site and water purchased from the Hunter Water Corporation. Water would be used for the following applications:* • *dust suppression on road surfaces, coal stockpiles and at conveyor transfer points;* • *washdown of site vehicles, conveyors, wharf areas, shiploaders and other coal handling machinery;* • *belt washing;* • *landscape irrigation;* • *fire protection systems; and* • *employee amenities and other minor potable water uses (Section 2.9.4).* *Water would be recycled on-site to reduce the quantity of water purchased from the Hunter Water Corporation. If required, alternative water supply sources would be investigated during the life of the Project including the beneficial use of treated sewage effluent from the Hunter Water Corporation or local bore water. Any such alternative sources of Project water supply would be subject to separate environmental assessment and approvals.* Stormwater would be managed in accordance with the Site Water Management Plan (SWMP) to be developed for the Project and would include the following elements described in Section 4.6.3 of the EA: *A network of stormwater drains and stormwater settlement ponds, primary and secondary settling ponds and a site water pond would be used to manage runoff on and around the site (Section 2.8.1). All site water management structures would be lined with low permeability materials (e.g. compacted clay or geo-membrane) to minimise the potential for leakage.* *Stormwater runoff from areas external to the Project site would be directed around the Project infrastructure areas by table drains and culverts to the existing stormwater drainage system on Kooragang Island (Section 2.8.1). Stormwater runoff collected on the Project infrastructure areas would be diverted through sediment control structures and/or to stormwater settlement ponds. Lined sumps would be installed where necessary at the end of the open drains to act as pollutant traps.* *The primary and secondary settling ponds and site water pond would be constructed to the north of the coal storage area (Figure 2-7). The settling ponds would capture sediments not trapped in the concrete sumps in open drains. Water in the site water pond would be pumped to a raw water tank with a capacity of up to 4 ML.*

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			The raw water tank would store water for re-use on-site for purposes such as dust suppression, fire protection, plant washdown and landscape management. *Stormwater runoff from the rail infrastructure area would be diverted via table drains along the rail infrastructure corridor to localised sediment control structures/settlement ponds. Once runoff has passed through these structures it would report to the existing drainage system across the KIWEF. Sediment control structures/settlement ponds would also be installed at the administration and workshop area and the wharf facilities and shiploaders. Water collected in these ponds would be transferred via pump and pipeline to the primary and secondary settling ponds (Figure 2-7).* *Consistent with the design goal of no discharge to the Hunter River during operations, the stormwater settlement ponds, primary and secondary settlement ponds and the site water pond would be designed and constructed with sufficient capacity to contain a 1 in 100 year ARI rainfall event. All Project water management structures would be operated in accordance with the requirements of the Project EPL.* As stated in Section 4.6.2 of the EA, a 1% Annual Exceedance Probability (AEP) flood level would not inundate the Project site: *As discussed in Section 4.6.1, the Lower Hunter River Flood Study (NCC and Port Stephens Council, 1994) indicated that as a result of land reclamation and filling undertaken on the southern side of the Kooragang Island mainline rail embankment a 1% Annual Exceedance Probability (AEP) flood level would not inundate the Project site (Figure 4-11). The Flood Study (1994) also concluded that localised flooding may occur across the site as a result of poor local drainage (NCC and Port Stephens Council, 1994). Development of the Project would not result in any material change to the conclusions made in the Flood Study (1994) (NCIG & Connell-Hatch, 2006).* As part to the Proposed Extension of Shipping Channels, Port of Newcastle EIS (Waterways Authority, 2003), a Tidal Hydrodynamic Study was undertaken by NPC. The study found that there is "…virtually no effect on tidal planes in the estuary as a result of the proposed dredging". Settling ponds have been designed with sufficient capacity to contain a 1 in 100 year annual recurrence interval (ARI) rainfall event, as stated in Section 4.6.3 of the EA: *Consistent with the design goal of no discharge to the Hunter River during operations, the stormwater settlement ponds, primary and secondary settlement ponds and the site water pond would be designed and constructed with sufficient capacity to contain a 1 in 100 year ARI rainfall event. All Project water management structures would be operated in accordance with the requirements of the Project EPL.*
42	Other (Rail)	Concerns were raised with	The requirement for the inclusion of the High Capacity Optional Inlet Rail Spur and Rail Sidings (Project northern rail

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		respect to the inclusion of the High Capacity Optional Inlet Rail Spur and Rail Sidings (Project northern rail spur), as part of the Project in the EA.	spur), as part of the Project is stated in Section 3.9.2 of the EA: *The construction of a large CET such as the Project requires a significant establishment period to obtain the required environmental approvals and develop infrastructure such as the rail infrastructure, coal storage area, conveyors, combined stacker/ reclaimers and shiploaders. The Project would initially be constructed to a capacity of 33 Mtpa, which is expected to provide some latent capacity at establishment.* *Following the establishment of the 33 Mtpa capacity CET, expansion of the Project up to 66 Mtpa would be undertaken progressively on the basis of projected export demand. An analysis of a range of published coal export demand scenarios has been undertaken by Gillespie Economics (Appendix G). The analysis indicates that expansion of the CET above 33 Mtpa capacity may be required as early as 2010 or at some time after 2015. The Project has therefore been designed with the ability to progressively expand up to 66 Mtpa capacity in order to meet increases in coal export demand as they occur.* *…* *This approach to progressive development of the Project also facilitates the ability for cash flow generated by the initial development to assist with the funding of subsequent expansion. This is a significant consideration given the significant scale of capital investment associated with the Project.* Further, as stated in Section 2.4.1 of the EA: *Consultation with ARTC indicates that a future flyover may be required for the high capacity optional inlet rail spur to manage the interaction of Project rail traffic and rail traffic on the Kooragang Island mainline when the facility is operating at 66 Mtpa. If a flyover is required it would be subject to further detailed design, assessment and separate approvals in consultation with the ARTC. The high capacity optional inlet rail spur assessed as part of this EA is based on an at-grade connection to the Kooragang Island mainline (Figure 2-1).* The Project northern rail spur may not be required for the Project and is subject to detailed design and further consultation with the ARTC. Notwithstanding, the Project northern rail spur has been included as an element of the Project and assessed accordingly.
43	Other (Visual)	Concerns were raised with respect to the potential visual impact of Project conveyor and wharf infrastructure on Kooragang Island.	The visual impacts from the conveyor and wharf facilities are assessed in Section H6.2.3 of the Visual Assessment, Appendix H of the EA: *The ship loading facility and wharf would be located to the south of Cormorant Road (**Plate H6.6**), and the connecting conveyor from the coal storage area would cross over the road. It would be similar in form to that further along Cormorant Road (**Plate H6.7**). The new ship loading facility and wharf would be a dominant element in close proximity to the road, but consistent with the existing facilities immediately to the east. The level of visual modification would therefore be moderate to high.*

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			Through the establishment of foreground vegetation screening, the Visual Assessment applied a low to moderate level of visual impact upon motorists travelling along Cormorant Road, as stated in Section 4.5.2. of the EA: *Given the moderate to high level of visual modification coupled with a moderate to high level of sensitivity, a moderate to high visual impact would result on views from Cormorant Road, immediately adjacent to the Project site. The establishment of foreground vegetation screening along Cormorant Road along the southern boundary of the Project coal storage area to obscure potential views of the Project site would reduce the level of visual impact for vehicles travelling along Cormorant Road to low to moderate (Table 4-18).* The Project would be visually similar to the existing PWCS Kooragang Coal Terminal (including coal stockpiles and conveyors) on either side of Cormorant Road (Section 4.5.2 of the EA). Further, as stated in Section 3.3.1 of the EA: *The Project is not considered likely to adversely impact on the amenity of the south arm of the Hunter River as the Project is consistent with existing uses on Kooragang Island (port and wharf facilities, including coal loading) and incorporates a range of mitigation measures, including visual mitigation measures.*
44	Other (Complaints)	Concern was raised that a phone number (or hotline) should be established by NCIG for the public to make complaints or raise concerns.	NCIG would establish a hotline for members of the public for the purpose of receiving any complaints in relation to the Project. The public would be notified of the complaints line number. NCIG anticipate that if approved, the Project Approval and EPL would include a requirement to establish a complaints hotline.
45	Other (Road transport)	Concern was raised with respect to consideration of future development, in particular a residential project near Fern Bay increasing traffic flows in the area and whether this had been considered in the Road Transport Assessment.	The Road Transport Assessment, Appendix D of the EA includes an assessment of Project road transport impacts for the years 2007 and 2017. The background traffic conditions for these years were generated based on 2005 traffic count data with assumed traffic growth of 1% per year, as follows: • *Scenario 1 – 2007 background traffic conditions (with 2 years traffic growth at 1% per year) with inclusion of development traffic from approved developments….* • *Scenario 3 – 2017 background traffic conditions (with 12 years traffic growth at 1% per year plus inclusion of development traffic from approved developments).* The assumed 1% per annum increase in traffic (i.e. 12% increase by 2017) is conservative when compared to analysis of recent traffic count data provided in the Road Transport Assessment, Appendix D of the EA, which indicated Tourle Street traffic flows in 2004 were lower than measured flows in 1998. The Road Transport Assessment has considered traffic growth associated with future development in the assessment of traffic impacts (Section 4.11.2 of the EA). In addition, the Road Transport Assessment concluded that the Project would

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			not create significant adverse traffic impacts on the surrounding road network during either construction or operation and is considered to be acceptable from a road transportation perspective (Section 4.11.2 of the EA).
46	Other (Access)	Concern was raised in regard to: • security of the Project site, in particular whether the Project would be staffed at all times; and • public site access provisions for viewing berthing ships and the harbour.	Construction activities with the potential to be audible at surrounding residential areas would generally be undertaken between 7.00 am and 6.00 pm, up to seven days per week (Section ES3.2 of the EA). Dredging operations and associated deposition of dredged material on the Project site would be undertaken up to 24 hours per day. The Project would operate 24 hours per day, seven days per week, hence would be staffed at all times. With respect to security of the Project, Section 2.9.5 of the EA states: *Existing site security fencing on Kooragang Island would be maintained and security patrols undertaken for the life of the Project. Additional site security fencing for the Project would be erected as required, including fencing of the rail infrastructure, wharf facilities and shiploaders. Site security would meet the requirements of the Maritime Transport and Offshore Facilities Security Act, 2003.* In regard to site access provisions for viewing/berthing of ships and the harbour, it was stated in Section 3.3.1 of the EA: • *The Project is located on the north bank of the south arm of the Hunter River. Areas of foreshore open space in the vicinity of the Project site to the south of Cormorant Road are generally accessible to the public (e.g. open space near the existing wind turbine).* • *The Project is not considered likely to adversely impact on the amenity of the south arm of the Hunter River as the Project is consistent with existing uses on Kooragang Island (port and wharf facilities, including coal loading) and incorporates a range of mitigation measures, including visual mitigation measures.*
47	Other (Socio-Economic)	Concern was raised with respect to potential impacts of the Project on resource sector employment.	Section G4 of the Socio-Economic Assessment, Appendix G of the EA, examines the employment and other regional economic impacts of construction and operation of the Project. The Socio-Economic Assessment does not examine employment and other regional economic impacts of mining activity in the region.
48	Other (Rail)	Concerns were raised regarding the potential flora and fauna impacts of the High Capacity Optional Inlet Rail Spur and Rail Sidings, in particular:	Section 4.1 of the Fauna Assessment, Appendix F of the EA considered the impacts from the High Capacity Optional Inlet Rail Spur and Rail Sidings (Project northern rail spur), as follows: *The construction of the Project northern rail spur has the potential to impact on shorebirds which use the southern end of Deep Pond as known habitat would be disturbed during construction. The potential impact on shorebirds has been considered in the threatened species evaluations presented in Section F3.6. Relevant*

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		• the potential impact on shorebirds during construction; • the amount of habitat potentially removed by the High Capacity Optional Inlet Rail Spur and Rail Sidings; and • the suitability of existing shorebird habitat once the High Capacity Optional Inlet Rail Spur and Rail Sidings is constructed.	*mitigation measures to be implemented as part of the Project are described in Section F4.2.* The suitability of Deep Pond as a habitat for shorebirds is discussed in Section 4.2 of the Fauna Assessment, Appendix F of the EA: *Habitat in the form of shallow areas for foraging shorebirds would be created during the construction of the northern rail spur embankment, if required to be installed when the Project is fully developed to 66 Mtpa, by modifying the design of the embankment batter slopes to have a gentle toe gradient (i.e. in the submerged zone of the batter slope). This would result in the creation of shallow areas suitable for shorebirds in Deep Pond. The specifications of this initiative would be detailed in the FFMP.* *In addition, where practicable, construction of the northern rail spur embankment (if necessary) in the vicinity of Deep Pond would be timed to avoid migratory shorebird usage (i.e. May to August).*
49	Other (Berths)	Concerns were raised with respect to the precise locations of berths K8, K9 and K10 along the south arm of the Hunter River.	The location of berths K8, K9 and K10 as shown on Figures in the EA are conceptual with respect to their approximate location. The final location of berths K8, K9 and K10 would conform to coordinates agreed to with (NPC) and subject to further consultations with NPC.
50	Other (Capping)	Concerns were raised with respect to the potential impact of Project rail infrastructure on future capping of the KIWEF site (and the efficacy of capping).	The capping of the Project rail infrastructure would be integrated with the final capping of the KIWEF, as stated in Section 3.6.3 of the EA: *The closure/capping of the KIWEF to the satisfaction of the DEC would be undertaken by the RLMC and the timing of this activity is outside of the control of NCIG. The localised capping of any landfill areas traversed by the Project rail infrastructure would be undertaken by NCIG during Project construction works in such a manner that can be readily integrated with the final capping of the KIWEF and meets the relevant goals of benchmark techniques 28 and 29 in Environmental Guidelines: Solid Waste Landfills (EPA, 1996) (Sections 2.4.1 and 4.7.2 and Appendix D).*
51	Other (Electrical infrastructure)	Concerns were raised with respect to potential environmental impacts of electricity supply and distribution infrastructure.	The off-site construction of electricity supply and distribution infrastructure for existing and future development on Kooragang Island is subject to a separate approval process and is therefore not assessed in the EA, as stated in Section 2.9.3 of the EA: *Energy Australia would supply electricity to the Project from a new 132 kilovolt (kV)/33 kV zone substation. The new substation is being developed by Energy Australia and is subject to separate approvals. An area has been set aside for the new 132 kV/33 kV zone substation by Energy Australia (Figure 2-1). The substation is planned for existing and future industrial development on Kooragang Island (i.e. the substation is*

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			not exclusively for power supply to the Project).
52	Other (Tourle Street Bridge)	Concerns were raised with respect to the width and timing of the replacement of the Tourle Street Bridge.	The replacement bridge to be installed on the alignment of the existing Tourle Street Bridge is subject to RTA design and a separate approval process and could be in place in about five years as stated in Section 2.10 of the Road Transport Assessment, Appendix C of the EA: *The existing Tourle Street bridge is near the end of its effective life. The RTA have advised a replacement bridge will be constructed to the east of the existing Tourle Street Bridge, which will then be demolished. Cormorant Road to the north of the bridge will be realigned to tie into the new structure until such time as the above road widening is implemented. At that time, a second new bridge is to be built on the alignment of the existing bridge. The RTA has advised that the first new bridge structure could be in place in about five years.* The replacement of the Tourle Street Bridge has been identified in the *State Infrastructure Strategy – New South Wales 2006-07 to 2015-16.*
53	Other (Coal markets)	Concerns were raised with respect to the trend of international coal markets.	International coal market scenarios were modelled as stated in Section G3.3 of the Socio-Economic Assessment, Appendix G of the EA: *ABARE (2005) found that demand for Hunter Valley coal is strong and predicted that potential demand for coal exports from the Hunter Valley will increase at an annual rate of 2.8% per annum from the 2004 level of 78 million tonnes (Mt) to reach 122 Mt in 2015. As has historically been the case, most of this demand will be for thermal coal with the remainder for metallurgical (or coking) coal.* *Given the uncertainty surrounding any projections of international coal trade, ABARE also identified two other potential export demand scenarios for Hunter Valley coal that are used in this analysis for sensitivity testing. The first scenario is where the Kyoto Protocol comes into force and Japan meets its Kyoto Protocol emissions reduction target by reducing its demand for coal. The second scenario is where China exports less coal and imports more to meet its rapidly rising domestic energy demand.* *These potential demand scenarios for Hunter Valley coal are illustrated in Figure G3.1.* *Recent presentations by ARTC (ARTC, March 2006) indicate it has significantly upgraded its predictions of Hunter Valley export coal demand. ARTC (March, 2006) predicts export demand to rise from approximately 100 Mt in 2006 to approximately 150 Mt by 2012. This level of export demand is being used as the basis for ARTC rail upgrade planning and is significantly higher than the ABARE (2005) high export demand scenario illustrated on Figure G3.1.* *It is worth noting here that predictions of the future export demand for Hunter Valley coal have been revised upwards a number of times in recent years as growth in demand exceeded earlier predictions. For example*

No.	Subject	Issue	Response
			ARTC (2006) has upgraded its export demand predictions significantly in comparison with its previous 2005 report (ARTC, 2005).
54	Other (Project alternative)	Concern was raised that a "no project" alternative was not considered in the EA.	Consideration was given to the project alternative that the Project not proceed, the consequence of which is stated in Section 3.9.1 of the EA: *The Project is required to address a projected shortfall in port capacity as export demand for Hunter Valley coal increases. The following discussion outlines the expected increasing demand for Hunter valley coal in the short to medium term and the projected shortfall in port capacity that is anticipated to occur if the Project is not developed.* *As part of an Australian Government initiative, the Federal Department of Industry, Tourism and Resources commissioned the Australian Bureau of Agricultural and Resource Economics (ABARE) to assess:* • *the current and future demand for coal from the Hunter Valley;* • *the capacity of coal producers to meet current and expected future demand for coal from the Hunter Valley;* • *whether current rail and port infrastructure is sufficient to support estimated coal exports from the Hunter Valley over the medium term; and* • *the potential economic costs of infrastructure constraints in the Hunter Valley coal supply chain.* *The ABARE (2005) study found that demand for Hunter Valley coal is strong and predicted that, as a medium case, potential demand for coal exports from the Hunter Valley will increase at an annual rate of 2.8% per annum from the 2004 level of 78 Mtpa to 122 Mtpa in 2015. Further, ABARE estimates that at a coal price of US$35/t, producers could supply between 130 Mtpa and 140 Mtpa of coal by 2015 if unconstrained by the coal supply chain. If coal prices were US$50/t then the ABARE report indicates coal producers could supply over 200 Mtpa of coal by 2015 if unconstrained by the coal supply chain.* *The recent ARTC Hunter Valley Corridor Capacity Improvement Strategy (ARTC, 2006) indicates that the ARTC planning for export demand rises from approximately 104 Mtpa in 2006 to 145 Mtpa in 2011, and possibly as high as 157 Mtpa by 2015. These demand predictions are based on consultation with the coal mining industry.* *The ability of individual Hunter Valley coal producers to meet potential market demand for their coal depends on there being sufficient capacity in the coal supply chain (i.e. railway and port infrastructure) to facilitate export.* *The estimated coal supply chain capacity in 2005 was 85 Mtpa. This included the capacity of Port Waratah*

No.	Subject	Issue	Response
			Coal Services' Coal Terminals (Kooragang Island and Carrington) at 89 Mtpa (ABARE, 2005) and the rail system capacity of approximately 85 Mtpa (ARTC, 2005). Export of coal through the Port of Newcastle totalled approximately 81 Mtpa in 2005 (HVCCLT, 2006). *PWCS has an existing approval to expand the combined capacity of its Kooragang Island and Carrington coal terminals to 102 Mtpa. Similarly, the ARTC has a planned programme of rail infrastructure improvements to maintain rail capacity ahead of anticipated coal export demand (as described in Section 3.6.4).* *Consideration of the ABARE and the ARTC coal demand and supply scenarios indicates that even with the planned increase in PWCS port capacity to 102 Mtpa, the ability for coal producers to meet potential export demand through the Port of Newcastle is expected to be constrained if the Project were not to be developed (Appendix G).*
55	Other (Monitoring)	Concern was raised with respect to the frequency of air, noise and water monitoring and the reporting of monitoring results to relevant stakeholder groups.	The Draft Statement of Commitments (Section 5 of the EA) describes the environmental monitoring programme proposed for the Project, including air quality, noise, surface water and groundwater monitoring. An overview of environmental monitoring is provided below: • Noise - monitoring would comprise quarterly attended and unattended monitoring. Quarterly monitoring would be conducted at up to six locations in the vicinity of the Project. • Air Quality - dust deposition and PM_{10} monitoring would be undertaken during the construction and operation of the Project. • Surface Water – water quality of site water management structures. • Groundwater – monitoring of groundwater level and quality using a network of piezometers and bores. With respect to the reporting of monitoring results, the Draft Statement of Commitments (Section 5 of the EA) provides: *NCIG will prepare an AEMR (Annual Environmental Management Report) that reviews the performance of the Project against the construction and operation management plans, provides an overview of environmental management actions and summarises monitoring results over the 12-month reporting period. The AEMR will be distributed to relevant government agencies and stakeholders, and copies provided to other interested parties if requested.*
56	Other (KWRP)	Concerns were raised with respect to the NCIG compensatory financial contributions not being defined in dollar terms. Concerns were	As stated in the Draft Statement of Commitments (Section 5 of the EA), NCIG would make a financial contribution to the KWRP, habitat creation measures, University of Newcastle (or other appropriate recognised research body) and Hunter Wetlands Centre. It is anticipated that these financial contribution commitments and works to be undertaken would be defined as part of the Project Approval conditions.

No.	Subject	Issue	Response
		also raised with respect to the level of consultation undertaken with KWRP and the Hunter-Central Rivers Catchment Management Authority (HCMA).	As stated in Section 3.7.1 of the EA, the HCMA was satisfied with the level of consultation undertaken for the Project, including: *The HCMA were consulted regarding the threatened and migratory species evaluation and flora and fauna compensatory measures. The HCMA indicated that they were satisfied with the level of consultation undertaken for the Project, in particular consultation with the KWRP. Consultation was undertaken with the KWRP, which is a subsidiary of the HCMA, during the preparation of this EA. Issues discussed included:* • *justification for the Project (Section 3.9);* • *interaction with the existing Port Consent (Section 3.6.1);* • *design of the layout of the Project rail corridor and concerns over its potential to sterilise the future beneficial use of land zoned as Port and Industry Zone (Section 3.9.3);* • *potential air quality impacts (Section 4.4);* • *assessment of potential impacts on flora and fauna and the list of threatened and migratory species to be assessed in evaluations (Sections 4.8 and 4.9);* • *compensatory measures, including the long-term financial viability of compensatory measures (Sections 4.8 and 4.9); and* • *potential alternatives to the proposed compensatory measures, including the purchase of compensatory lands (Appendix F).* *Professor David Goldney (co-author of flora and fauna studies undertaken for this EA) and Professor Arthur White (peer reviewer of frog-related studies undertaken for this EA) met with the KWRP to specifically discuss the compensatory measures presented in this EA.* *Peggy Svobada (KWRP Project Manager) was also a member of the Project SFG (Section 3.7.2).*
57	Other (ERA)	Concerns were raised with respect to: • the ERA framework identification of risk thresholds; • consideration of flora	As stated in Section 1.6.2 of the ERA, Appendix J of the EA, the ERA was conducted by Safe Production Solutions in accordance with Australian Standard (AS) AS 4360:2004[9] and MDG1010[10]. Consequence levels were determined by workshop attendees comprising a broad range of skills and experience relevant to Project, and in accordance with AS 4360:2004. Flora and fauna was included in the Environmental Risk Analysis through the "soil" key environmental risk group. This was the highest ranked risk group. Potential impacts include the loss of habitat in the area to be cleared for construction, most significantly in the area of Big Pond (Section 4.3 of the Environmental Risk Analysis, Appendix J of

[9] Standards Australia (2004) AS/NZS 4360 *Risk Management.*
[10] NSW Department of Mineral Resources (1997) *Risk Management Handbook for the Mining Industry.* MDG1010, May 1997.

No.	Subject	Issue	Response
		and fauna in the ERA; and • the risk thresholds used in the ERA.	the EA). Mitigation measures are detailed in Section 4.3.3 of the Environmental Risk Analysis, Appendix J of the EA. As stated in Section 4.3 of the Environmental Risk Analysis, Appendix J of the EA, intolerable risks were quantified in Table 6 – Risk Ranking Table. No key environmental risk groups were determined to have an intolerable risk ranking.
58	Other (Water management)	Concerns were raised with respect to not including the SWMP in the EA.	A SWMP would be developed for the construction and operation phases of the Project as stated in the Draft Statement of Commitments (Section 5 of the EA): ***Site Water Management Plan (Construction)*** *A SWMP will be developed for the construction phase of the Project in consultation with relevant authorities. The construction SWMP will describe the Project water management system, including:* • *details of all water management structures including the water management system for dredge sea water;* • *locations and design specifications for all water diversions from undisturbed runoff areas including channel design and stabilisation, sediment retention storages and other structures;* • *details of internal drainage of water from construction/development runoff areas including bunding, drainage channels, dewatering sumps and pump and pipelines;* • *procedures for the management of groundwater during excavations and temporary dewatering activities on site; and* • *procedures that will be implemented to ameliorate potential surface water and groundwater impacts.* *The SWMP will be reviewed and revised as required in consultation with relevant authorities and will be periodically updated during the period of construction, where necessary.* *Erosion and sediment control strategies for the Project will be developed and documented in an Erosion and Sediment Control Plan (ESCP) and will be a component of the SWMP. The ESCP will be prepared in a progressive manner prior to the development of each Project component involving land disturbance*. *The measures presented in the ESCP will aim to control soil erosion and sediment generation proximal to the source and thereby minimise the potential for Project activities to adversely affect downstream water quality.* *The ESCP will be prepared in general accordance with the manual Managing Urban Stormwater: Soils and Construction – Volume 1 (Landcom, 2004). The design capacity of erosion and sediment control structures will be determined in consultation with relevant authorities based on catchment area, soil types, design life*

No.	Subject	Issue	Response
			and associated environmental risk. *The ESCP will be revised as required in consultation with relevant authorities.* *A Surface Water and Groundwater Monitoring Programme (SWGMP) will be developed for the Project as part of the water management system and will be detailed in the SWMP. The monitoring programme will include:* • *monthly sampling at a network of surface water and groundwater quality monitoring sites;* • *analysis of groundwater samples for a range of parameters including, but not necessarily limited to groundwater level, pH, electrical conductivity (EC), total dissolved solids (TDS), total suspended solids (TSS), sulphate, Total polycyclic aromatic hydrocarbons (PAH) and a suite of metals;* • *analysis of surface water samples for a range of parameters including, but not necessarily limited to pH, EC, TDS and TSS.* • *data review procedures for analysing surface water and groundwater quality results; and* • *investigation triggers and contingencies for managing potential adverse impacts of the Project on surface water and groundwater quality.* ***Site Water Management Plan (Operation)*** *A SWMP will be developed for the operational phase of the Project in consultation with relevant authorities. The operational SWMP will describe the Project water management system, including:* • *updates of the predicted site water balance including details of the Project water supply system (Section 2.8.2);* • *details of all water management structures including settling ponds and water tanks;* • *locations and design specifications for all water diversions from undisturbed runoff areas including channel design and stabilisation, sediment retention storages and other structures;* • *details of internal drainage of water from construction/development runoff or operational areas, including bunding, drainage channels, dewatering sumps and pump and pipelines; and* • *procedures that will be implemented to ameliorate potential surface water impacts.* *A SWGMP will be developed for the Project as part of the water management system and will be detailed in the SWMP and will include:*

No.	Subject	Issue	Response
			• *monthly sampling at a network of surface water and groundwater quality monitoring sites;* • *analysis of groundwater samples for a range of parameters including, but not necessarily limited to groundwater level, pH, EC, TDS, TSS, sulphate, Total PAH and a suite of metals;* • *analysis of surface water samples for a range of parameters including, but not necessarily limited to pH, EC, TDS and TSS;* • *data review procedures for analysing surface water and groundwater quality results; and* • *investigation triggers and contingencies for managing potential adverse impacts of the Project on surface water and groundwater quality.* *The SWMP will be reviewed and revised as required in consultation with relevant authorities and will be periodically updated over the life of the Project.*
59	Other (Development assessment)	Concerns were raised with respect to the assessment of the Project as a critical infrastructure project.	The Project is being assessed as a major project under Part 3A of the EP&A Act, as stated in Section 3.1 of the EA: *On 19 April 2006, the Director-General of the DoP, under delegation from the Minister for Planning (the Minister), formed the opinion that the Project meets the requirements of Major Projects SEPP (clause 6) and declared the Project to be a major project under Part 3A of the EP&A Act. In accordance with section 75D(1) of the EP&A Act, the Minister is the approval authority for the Project.*
60	Other (KIWEF)	Concerns were raised with respect to the consideration of a thermal-desorption methodology as an alternative to the proposed capping of the KIWEF and ongoing management of the KIWEF.	With respect to the potential use of thermal-desorption methods, it is relevant to note that the capping/closure component of the Project only extends to the footprint of relevant Project infrastructure. Capping/closure of the remainder of the KIWEF is the responsibility of RLMC. The capping strategy undertaken by NCIG is consistent with the strategy proposed for the entire KIWEF. The KIWEF is administered and managed by the RLMC as stated in Section 3.6.3 of the EA: *Historical landuse of the Project site includes grazing, land reclamation and the long-term disposal of dredge spoil (Section 1.1.4). In addition, the KIWEF was established in 1972 and is a licensed waste disposal facility that is under the control of the RLMC. The facility has not been utilised significantly for waste disposal since 1999, however, it remains a licensed facility and is managed by the RLMC in accordance with EPL 6437 under the POEO Act.*

Responses to Submissions - Part B

NEWCASTLE COAL INFRASTRUCTURE GROUP COAL EXPORT TERMINAL ENVIRONMENTAL ASSESSMENT
RESPONSES TO SUBMISSIONS

No.	Subject	Issue	Response
1	Air	Concerns were raised with respect to greenhouse gas emissions and the potential for the construction and operation of the Newcastle Coal Infrastructure Group (NCIG) CET to contribute to global climate change.	An assessment of Project greenhouse gas emissions is provided in the Air Quality Impact Assessment, Appendix B of the EA. As stated in Section 4.4.2 of the EA: *The major source of greenhouse gas emissions from the Project development would be generated indirectly by the use of electricity to power the coal storage conveyors and stacker reclaimers, shiploading machines and associated equipment. In addition, minor emissions would occur from the combustion of diesel and petrol in mobile equipment on-site.* *An assessment of the Project greenhouse gas emissions was conducted using empirical emission factors provided by the Australian Greenhouse Office (AGO) (2005) (Appendix B).* Section 3.9.4 of the EA, states that: *Greenhouse gases generated at the Project are estimated at 39,990 tonnes of carbon dioxide equivalent per annum (t $CO_{2\text{-}e}$/year) for operations at 33 Mtpa and 69,760 t $CO_{2\text{-}e}$/year for operations at 66 Mtpa.* *The EA does not contain an assessment of the greenhouse gas emissions which may be emitted from mining operations, rail transport or the burning of coal that is exported through the Project.* *The greenhouse gas emissions from mining and associated domestic rail transport are matters that have been or will be specifically considered in the assessment process for individual mining operations. The Project does not seek approval for any mining operations. Therefore, it would be inappropriate to include greenhouse gas emissions associated with mining operations when assessing the greenhouse gas emissions from the operation of the Project.* *Similarly, it would be inappropriate to incorporate an assessment of the emissions of the burning of coal that is exported through the Project, when assessing the impacts of the Project. The former are impacts created by third party consumers of coal and these impacts are regulated by regimes in the consumers' countries.* Further, it is stated in Section G3.8 in the Socio-Economic Assessment, Appendix G of the EA: *At a global level, substitution effects also become important. Refusal of the Project and associated*

No.	Subject	Issue	Response
			infrastructure and mining developments would not stop the burning of coal by other countries. The coal would simply be sourced from elsewhere. Hence, greenhouse gas emissions from the burning of the coal overseas would occur regardless, and should not be attributed to the Project. *The major destinations of Hunter Valley coal exports are Japan, Korea and Chinese Taipei (ABARE, 2005). Strong growth in demand is forecast for Korea, Chinese Taipei and Malaysia, while Japanese thermal coal imports are projected to increase more slowly (ABARE, 2005). South Korea, Malaysia and Japan have all signed and ratified the Kyoto protocol, while Chinese Taipei has not. Nevertheless, each of these countries has the sovereignty to address greenhouse gas emissions as they see fit within any requirements of conventions and protocols to which they are signatories.*
2	Noise and Vibration	Regulatory agencies have recommended conditions of approval for the Project including limiting the type of trains that are received by the Project.	NCIG is not aware of any restriction imposed on any of the three existing coal terminals in NSW with respect to the type of trains received. The NCIG Coal Export Terminal (CET) has been designed to accept any locomotives. The equipment design maximum L_{Aeq} sound power levels (SWLs) (dBA re 10 pW) used in the Project noise assessment (Table 15) includes overall L_{Aeq} SWLs for locomotives on the Project rail spurs and rail loops on low idle, high idle, arrival and moving off, ranging from 105 dBA to 109 dBA. Further, overall L_{Aeq} SWLs for wagon creak, wheel squeal and coupling take-up used in the Project noise assessment were 116 dBA, 113 dBA and 106 dBA, respectively. These SWLs used are considered to be conservative for the purposes of the Project noise assessment and should not limit the use of specific locomotives. Further, the scenarios modelled in Project noise assessment were developed to be representative of worst-case noise emissions for noise sensitive receivers to the west with the orientation of trains on the rail spurs and rail loops located in the model with a bias to the west. Based on the above, the type of locomotives that operate on the Project rail spurs and rail loops should not be limited because it would provide unfair commercial advantage to the other coal loaders and to some of the rail operators. The relevant assessment is presented in Section 4.3.2 of the EA. In addition, preliminary noise predictions have identified wagon creak, and wheel squeal as the highest contributing noise sources associated with train movements, as stated in Section 4.4 of the Project Noise Assessment, Appendix A of the EA. Limiting the type of trains used would not minimise rail transport noise emissions as wagon creak and wheel squeal sound power levels are independent of train type, as seen in Table 15, Section 4.4 of the Project Noise Assessment, Appendix A of the EA. There are a number of different types of locomotives that currently operate in the Hunter Valley Coal Network. The different types of locomotives and different number of locomotives on a train are required due to differing lengths of trains and differing maximum axle loading on rail tracks. The 90 Class locomotive is not capable to operate over all sections of the rail network and is not preferred to operate on smaller trains. NCIG needs to be able to receive all types of locomotive that operate in the Hunter Valley to enable then to receive the necessary coal from the various locations.

No.	Subject	Issue	Response
3	Noise and Other (Visual)	Concerns were raised regarding the timing of the construction of the earth bund and acoustic barrier.	An earth bund would be constructed north of Cormorant Road, as stated in Section 4.3.3 of the EA: *An earth bund approximately 1,500 m in length would be constructed on the northern side of Cormorant Road. The bund would be located east of the Pacific National access road between the coal storage area and Cormorant Road. The bund would essentially be an extension of, and of a similar height to, the existing southern embankment of the KIWEF.* The bund would be constructed during the construction phase of the Project. It should be noted that noise modelling undertaken by Heggies Australia indicated that the attenuation provided by this bund is not significant in terms of the overall noise impact of the Project. The construction of the acoustic barrier would be dependent on the expansion of Project export capacity as stated in Section 4.3.3 of the EA: *The implementation of the acoustic barrier would be dependant on the actual progressive development of the Project capacity (i.e. the acoustic barrier need only be installed as the capacity of the Project approaches 66 Mtpa, in order to facilitate compliance with the relevant Project noise criteria). Further details regarding the acoustic barrier are provided in Appendix A.*
4	Ecological Impacts	The impact of the northern rail spur was not considered in the EA.	The impact of the northern rail spur is addressed in Section 4.9.2 of the EA where it is stated that: *If required, the construction of the Project northern rail spur has the potential to impact on shorebirds which use the southern end of Deep Pond as known habitat would be disturbed during construction.* The potential impact on shorebirds has been considered in the threatened species evaluations presented in Section F3.6.4 of Appendix F of the EA. Section F3.6.4 relevantly states: *Potential habitat for migratory birds is located in the Project disturbance areas (e.g. Deep Pond) and a portion would be disturbed for the Project.*
5	Ecological Impacts	The EA does not adequately quantify the loss of shorebird habitat if the northern rail spur was constructed.	If the northern rail spur is constructed, approximately 1.3 ha of known habitat for shorebirds would be directly disturbed. A further 6.2 ha may be indirectly disturbed if the birds cease to use the area to the south of the northern rail spur. This potential impact was assessed in the EA and in the determination of the proposed compensatory measures.
6	Ecological Impacts	New compensatory habitat is required urgently to offset the loss of Big Pond.	The offsets funded by the NSW Government address the potential impacts of the development of Big Pond, as stated in Section 4.9.4 of the EA. Approximately $1.2 million dollars has been provided by the NSW Government to compensate for the loss of shorebird

No.	Subject	Issue	Response
			habitat in Big Pond. Big Pond is no longer used (or is suitable for use) by shorebirds as Big Pond has been drained of water and is overgrown with vegetation. Therefore, there should be no further requirement for the offset of Big Pond.
7	Ecological Impacts	An Australasian Bittern has been recorded foraging in sedges at the southern end of Pond K West, within the proposed rail corridor.	Disturbance of potential habitat of the Australasian Bittern from Pond K was included in the evaluation provided in Section F3.6.2 of the EA.
8	Ecological Impacts	Construction of rail unloading facilities on the rail loop will result in destruction of habitat for migratory shorebirds in Pond K East.	The potential impact on migratory shorebird habitat in Pond K East was assessed in Section F3.6.14 of the Fauna Assessment, Appendix F of the EA. Section F3.6.14 relevantly states: *The Project would involve the disturbance of a portion of known and potential habitat resources (i.e. ponds and associated vegetation) for migratory birds and may disrupt foraging, roosting and breeding in these areas.*
9	Ecological Impacts	No compensatory habitat has been considered as offsets for the loss of habitat in Deep Pond, Big Pond and Pond K.	The offsets funded by the NSW Government address the potential impacts of the development of Big Pond as stated in Section 4.9.4 of the EA. Approximately $1.2 million dollars has been provided by the NSW Government to compensate for the loss of shorebird habitat in Big Pond. Compensatory habitat for Deep Pond and Pond K is provided in Section 4.9.4 of EA (i.e. habitat creation for shorebirds/saltmarsh). Mitigation measures for the disturbance at Deep Pond is provided in Section 4.9.3 of the EA (i.e. habitat replacement at Deep Pond).
10	Ecological Impacts	SEPP 74 prevents the commitment of funds for rehabilitation in important habitat in Area E. SEPP 74 needs to be resinded.	Funding would be provided to the KWRP, as stated in Section 4.9.4 of the EA: *A financial contribution would be made to an organisation such as the KWRP for the removal of up to 6 ha of mangroves from coastal saltmarsh habitat. A financial contribution would also be made towards the construction of a flow control structure to minimise the potential for mangrove propagules to enter areas reserved for saltmarsh.* *…* *Alternatively, these initiatives may also be applied to lands within the Kooragang Nature Reserve.* If SEPP 74 prevents habitat creation initiatives being applied to lands within the KWRP, the initiatives would be applied to lands within the Kooragang Nature Reserve. The final location of any habitat creation initiatives would be determined as part of the development of the Flora and Fauna Management Plan (Section 5 of the EA) and associated consultation.

No.	Subject	Issue	Response
11	Ecological Impacts	The results of bird monitoring should be analysed and communicated to NPWS, Birds Australia, Hunter Bird Observers Club, KWRP and Newcastle Council.	Monitoring results will be provided on an annual basis to the Department of Environment and Heritage up to 2020. A summary and analysis of the results will also be provided each three years addressing any changes in the utilisation patterns of listed migratory shorebirds at Deep Pond since the monitoring commenced. Measures will be implemented to enhance existing habitat, or provide additional habitat, in the event monitoring indicates a decline in listed shorebird usage attributable to the construction and operation of the rail loop. Design and construction of any new habitat, or habitat enhancement measures, will be undertaken in consultation with a shorebird specialist. The Department of Environment and Heritage will be notified a minimum of 24 months prior to construction of the northern rail spur, if it proceeds. An assessment of potential impacts on listed shorebird habitat in Deep Pond will be provided at that time, together with a description of any design or other mitigation measures required to avoid significant impacts on listed birds. Such measures may include enhancement of existing habitat and creation of new habitat alongside the northern rail spur embankment. Design and construction of any new habitat, or habitat enhancement measures, will be undertaken in consultation with a shorebird specialist.
12	Ecological Impacts	To facilitate monitoring by ornithologists, it is requested that provision to be made for continued access to the Project area, especially Deep Pond.	Access to Deep Pond is currently restricted to the public and is managed by RLMC. The existing Delta Access Road would remain for the continuation of access to Deep Pond. Ongoing access to Deep Pond by interested parties would be regulated by RLMC. If the Project is approved, NCIG will undertake ongoing monitoring of the usage of the site by birds. NCIG will consult with relevant stakeholders in regard to making this monitoring data available to interested parties.
13	Ecological Impacts	The documented poor response of Green and Golden Bell Frogs to transplantation to compensatory habitat.	Green and Golden Bell Frogs will not be transplanted/translocated. Instead, as stated in Section 4.9.4 of the EA: *Habitat creation would be located on the perimeter of existing habitat areas to provide suitable habitat into which the existing Green and Golden Bell Frog population can expand.*
14	Ecological Impacts	Inconsistency between the EA and the Recovery Plan for the Green and Golden Bell Frog, and neglect of the Priority Action Statement.	NCIG believes that the compensatory and ecological initiatives proposed are adequate to offset the potential impacts of the Green and Golden Bell Frog. The Priority Action Statement was accessed when formulating the compensatory and ecological initiatives as evidenced in Sections 4.94 and 4.9.5 of the EA.
15	Ecological Impacts	Failure to explore the alternative that the project not be undertaken at all.	Consideration was given to the project alternative that the Project not proceed, the consequence of which is stated in Section 3.9.1 of the EA: *The Project is required to address a projected shortfall in port capacity as export demand for Hunter Valley coal increases. The following discussion outlines the expected increasing demand for Hunter valley coal in the short to medium term and the projected shortfall in port capacity that is anticipated to occur if the Project is not developed.*

No.	Subject	Issue	Response
			As part of an Australian Government initiative, the Federal Department of Industry, Tourism and Resources commissioned the Australian Bureau of Agricultural and Resource Economics (ABARE) to assess: • *the current and future demand for coal from the Hunter Valley;* • *the capacity of coal producers to meet current and expected future demand for coal from the Hunter Valley;* • *whether current rail and port infrastructure is sufficient to support estimated coal exports from the Hunter Valley over the medium term; and* • *the potential economic costs of infrastructure constraints in the Hunter Valley coal supply chain.* *The ABARE (2005) study found that demand for Hunter Valley coal is strong and predicted that, as a medium case, potential demand for coal exports from the Hunter Valley will increase at an annual rate of 2.8% per annum from the 2004 level of 78 Mtpa to 122 Mtpa in 2015. Further, ABARE estimates that at a coal price of US$35/t, producers could supply between 130 Mtpa and 140 Mtpa of coal by 2015 if unconstrained by the coal supply chain. If coal prices were US$50/t then the ABARE report indicates coal producers could supply over 200 Mtpa of coal by 2015 if unconstrained by the coal supply chain.* *The recent ARTC Hunter Valley Corridor Capacity Improvement Strategy (ARTC, 2006) indicates that the ARTC planning for export demand rises from approximately 104 Mtpa in 2006 to 145 Mtpa in 2011, and possibly as high as 157 Mtpa by 2015. These demand predictions are based on consultation with the coal mining industry.* *The ability of individual Hunter Valley coal producers to meet potential market demand for their coal depends on there being sufficient capacity in the coal supply chain (i.e. railway and port infrastructure) to facilitate export.* *The estimated coal supply chain capacity in 2005 was 85 Mtpa. This included the capacity of Port Waratah Coal Services' Coal Terminals (Kooragang Island and Carrington) at 89 Mtpa (ABARE, 2005) and the rail system capacity of approximately 85 Mtpa (ARTC, 2005). Export of coal through the Port of Newcastle totalled approximately 81 Mtpa in 2005 (HVCCLT, 2006).* *PWCS has an existing approval to expand the combined capacity of its Kooragang Island and Carrington coal terminals to 102 Mtpa. Similarly, the ARTC has a planned programme of rail infrastructure improvements to maintain rail capacity ahead of anticipated coal export demand (as described in Section 3.6.4).* *Consideration of the ABARE and the ARTC coal demand and supply scenarios indicates that even with the*

No.	Subject	Issue	Response
			planned increase in PWCS port capacity to 102 Mtpa, the ability for coal producers to meet potential export demand through the Port of Newcastle is expected to be constrained if the Project were not to be developed (Appendix G).
16	Ecological Impacts	Impact of the project on the endangered plant *Zannichellia palustris* has been underestimated.	*Zannichellia palustris* was subject to targeted surveys, and, in addition, previous records of this species recorded by Mary Greenwood in the Project site and surrounds were considered. Potential habitat of *Zannichellia palustris* was mapped by Connell Hatch and this was also considered in the evaluation presented in Section E3.6.1 of the Flora Assessment, Appendix E of the EA.
17	Ecological Impacts	Failure to assess and recognise the impact of key threatening processes on the endangered Saltmarsh and Freshwater Wetland Complex communities.	The relevant key threatening processes as listed by the DEC were assessed in Section 4.9.2 of the EA (i.e. Clearing of Native Vegetation and Alteration to the Natural Flow Regimes of Rivers, Streams, Floodplains and Wetlands). The first threatening process referred to by the submission (i.e the modification and filling of coastal wetlands for development) is covered by the key threatening processes listed above. The other two threatening processes referred to by the submission (i.e. changes in water salinity and nutrient levels and mangrove invasion due to rising tide levels) are not applicable to the Project as they are covered by the Port Consent.
18	Ecological Impacts	Impacts on the Kooragang population of Green and Golden Bell Frog (GGBF) have been underestimated.	An evaluation on the Green and Golden Bell Frog is provided in Section F3.6.1 of the Fauna Assessment, Appendix F of the EA, which concluded that disturbance of a proportion of the Green and Golden Bell Frog habitat by the Project is unlikely to disrupt the lifecycle such that a local viable population of this species would be placed at risk. Peer review letters by Doctor Arthur White and Associate Professor Michael Tyler are provided in Attachment 3 of the EA. These frog experts concluded that: *I concur with the findings of the aforementioned study and, based on the mitigation and compensatory measures presented therein, I am of the opinion that the Project is unlikely to have a significant effect on threatened frog species including the Green and Golden Bell Frog.*
19	Ecological Impacts	Misrepresentation of GGBF use of existing protected areas.	Section F3.6.1 of the Fauna Assessment, Appendix F of the EA states: *The Green and Golden Bell Frog is not considered to be adequately protected within the reserve system because in only 25% of cases does the major portion of the population habitat actually occur within the reserve – the majority of Green and Golden Bell Frog habitat occurs on other tenures….*
20	Ecological Impacts	The environmental assessment does not address the increased risk of foreign marine species invasion.	As noted in the Project Snapshot (Table 1-2, Section 1.2 of the EA), up to approximately 12 ships per week would be loaded as part of the Project. The Newcastle Port Corporation (NPC) administers shipping activities in the Newcastle harbour. The movement of loaded ships and associated ballast water discharge and air and noise generated during shipping movements would be undertaken in accordance with existing NPC approvals and licenses. Consultation with the NPC was undertaken during the development of the EA, as stated in Section 3.7.1 of the EA: *NCIG consulted with the NPC during the feasibility studies and preparation of this EA with respect to its*

No.	Subject	Issue	Response
			requirements for shipping management and interaction with existing approvals associated with the Port of Newcastle. The NPC attended the Planning Focus Meeting for the Project in March 2006. NCIG has consulted with the NPC regarding any applicable navigation requirements associated with the Project. This included joint participation in navigation trials in June 2006 (with the Project berth alignment and approved dredging of the south arm of the Hunter River) using a simulation model of the Port of Newcastle at the Australian Maritime College in Launceston, Tasmania. NCIG would continue to work closely with the NPC and other relevant stakeholders with respect to shipping management (including management of hydraulic interaction, ballast water discharge and noise). The Australian Quarantine and Inspection Service (AQIS) is the government agency responsible for the management of ballast water discharged within Australian ports. The discharge of high-risk ballast water from ships is prohibited anywhere inside Australian territorial seas.
21	Ecological Impacts	The applicant must provide a compensatory habitat package that includes management and maintenance of the offsets identified in the Environmental Assessment, including the projects already commenced to offset the 'Big Pond' site. Funding should be managed by a board, trust or other mechanism.	Prior to the commencement of construction of the Project rail infrastructure corridor, a compensatory habitat package shall be established in consultation with the DEC and to the satisfaction of the Director-General. The compensatory habitat package would be detailed in a Flora and Fauna Management Plan (FFMP) prepared for the development and would include: • description of the habitat creation including details of timing; • mechanisms for provision of funds for habitat creation and their ongoing adaptive management and maintenance; and • responsibilities for monitoring and review of the performance of the habitat creation. Implementation of the approved compensatory habitat package will commence prior to the commencement of construction of the Project rail infrastructure corridor. NCIG recognises that this is consistent with the recommendations provided by the DEC. In regards to offsets already commenced to offset the 'Big Pond' site, the offsets funded by the NSW Government address the potential impacts of the development of Big Pond as stated in Section 4.9.4 of the EA.
22	Other (Rail)	Concerns were raised with respect to consideration of alternative layouts for the Project northern rail spur.	Numerous layouts were considered for the Project northern rail as stated in Section 3.9.3 of the EA: *A number of options were considered for the layout of the Project railway spurs and loops and the train unloading stations. Consideration was given to the following issues:* • *the ARTC requirements including geometrical layout of rail components;* • *minimising the number of road/rail crossings required, especially avoiding the requirement for any*

No.	Subject	Issue	Response
			road/rail level crossings; • *locating the train unloading stations so fully loaded wagons could travel and unload on a straight length of track;* • *geotechnical considerations (i.e. to manage the potential for excessive differential settlement the rail alignment has been located to travel along existing KIWEF landfill cell embankments as much as practicable);* • *minimising the depth of fill along the rail embankment and the need for excavation of potentially contaminated soils from the KIWEF; and* • *avoiding sterilisation of potential valuable industrial land.* *The proposed design and layout of the Project rail infrastructure (Section 2.4) meets the requirements described above.* *During consultation with the KWRP and the SFG, a query was raised regarding the potential for the Project rail spurs and rail loops to sterilise the future use of land zoned for port and industrial use at the KIWEF. In particular, the concern related to the fact that the position of the Project infrastructure would restrict access to the northern portions of the KIWEF. This issue was considered during the design of the Project layout and in forming the Agreement for Lease with the RLMC. The Project design includes a rail overpass of the Delta access road (Figure 2-1) and conveyor overpasses of the Pacific National access road (Sections 2.4 and 2.6). In addition, vehicular access would be available to the inside of the Project rail loops. Each of these elements of the Project design facilitates continued access to the KIWEF. It is also relevant to note that the rail infrastructure established by NCIG may be of beneficial use to future industrial development that requires access to the NSW rail network.* In addition, detailed design of the Project northern rail spur necessitates a minimum track length of 1.6 km to facilitate efficient train movements to and from the Project and to accommodate future 1.9 km long trains from the Gunnedah region. The layout of the Project northern rail spur was further constrained due to the uncertain geotechnical characteristics of fill within the KIWEF. Regarding potential impacts on Pond H from the southern rail spur, the feasibility of avoiding impacts on Pond H was assessed and it was determined that to avoid Pond H would create an impact on Deep Pond. Therefore, the southern rail spur as proposed in the EA has been designed to minimise potential impacts on ponds within the Project area.

No.	Subject	Issue	Response
23	Other (PWCS Monitoring)	NCIG/PWCS integrated environmental monitoring system.	NCIG will work with PWCS to consider the feasibility of an integrated environmental monitoring system (including air quality and noise monitoring).

Additional Response to Submissions

NEWCASTLE COAL INFRASTRUCTURE GROUP

COAL EXPORT TERMINAL

ADDITIONAL RESPONSE TO SUBMISSIONS

DECEMBER 2006

CONTENTS

1. PURPOSE OF THIS DOCUMENT

This document has been prepared in response to a request from the Director-General and dated 21 September 2006 in accordance with section 75H(6) of the *Environmental Planning and Assessment Act 1979* (NSW) that Newcastle Coal Infrastructure Group Pty Ltd (**NCIG**) prepare a response to the issues raised during the public exhibition period for the NCIG Kooragang Coal Export Terminal (**Project**).

This report is part of NCIG's response to submissions and focuses on the issue of greenhouse gas (**GHG**) emissions raised in submissions by a number of interest groups and individuals.

This document responds to the key arguments concerning GHG emissions (including from the use of the coal exported via the Project) and global warming contained in submissions lodged with the Department of Planning (**DoP**) or Minister both before and after the Environmental Assessment (**EA**) for the Project was placed on exhibition on 10 August 2006. Many of these submissions also referred to climate change and consideration of ecologically sustainable development (**ESD**) principles. These issues are also dealt with in this document.

The remaining issues raised during the public exhibition period for the Project are addressed in a separate report.

2. SUBMISSIONS RECEIVED BY THE DEPARTMENT OF PLANNING (DOP) ON GREENHOUSE GAS AND ESD

The exhibition of the EA for the Project took place from 10 August to 14 September 2006.

A number of submissions received by DoP raised the issue of GHG emissions. A list of submissions is provided in Schedule 1. The following claims (each with a number of sub-issues) were made:

- the EA did not adequately assess the GHG impacts of the Project. The GHG emissions for the Project were said to produce (operating at a capacity of 66Mtpa) 160 - 170 million tonnes of carbon dioxide equivalent (**CO_2 e**) per annum.
- the EA did not consider GHG emissions for the Project from the following sources:
    - mining operations to recover the coal;
    - transportation of the coal to the Project; and
    - the combustion of the coal.
- the Project's contribution to climate change, through these GHG emissions, included:
    - an acceleration of climate change attributable to the Project and the export of coal;
    - approving the Project would be the equivalent of doubling New South Wales total GHG emissions per annum;

- NSW GHG emissions from all sources is 158 million tonnes CO_2 e per annum;
- 170 million tonnes of CO_2 e per annum equates to more than 30% of Australia's total GHG emissions per annum (for 2003).
- Newcastle region's per capita greenhouse emissions is over 9,000 times the global average;

- the EA did not consider the environmental impacts of climate change including:
  - that the Project would dramatically increase the Hunter Valley coal exports role in directly increasing the rate of climate change putting the Australian economy at risk;
  - that climate change will have a major impact on global weather patterns resulting in more intense droughts, floods, cyclones and fires;
  - that any increase in coal export volume must be considered an unacceptably high environmental impact that will directly threaten the survival of certain protected world heritage areas.
  - that CO_2 emissions account for over 60% of anthropogenic greenhouse effect and that GHG emissions need to be reduced to 60% below 1990 levels by 2050 and that our global temperature rise must remain below 2^o to avoid the worst impact of climate change.
  - that the New South Wales Government should refuse approval of the Project on the grounds that it would boost the acceleration of adverse climate change.

- the EA did not consider and correctly apply the terms of the *Environment Planning and Assessment Act* 1979 (NSW) including:
  - section 111 of the *Environment Planning and Assessment Act* 1979 (NSW) requires the consideration of GHG emissions from the burning of the coal in the EA.
  - the EA does not address the objects of the *Environment Planning and Assessment Act 1979* (NSW), particularly the principles of ecologically sustainable development and that approval of the CET is inconsistent with the principles of ESD.
  - that section 79 of the *Environment Planning and Assessment Act 1979* (NSW) requires consideration of ESD.

- that despite sustained lobbying by the Stakeholder Focus Group, the EA did not consider GHG resulting from the burning of the coal.

- that it would be impossible to approve the Project if the principles of ESD were followed.

- that it is unethical to increase coal exports when clean coal technology is still in the experimental stage.

- that there had been a failure to consider and assess the cumulative impact of the Project in the context of the proposal to expand coal mining in the Hunter Valley and the Gunnedah Basin.

3. REPORT STRUCTURE AND INTENT

This report will examine these assertions by:

- reviewing the relevant national and international policies and calculation methodologies relevant to GHG;

- calculating the GHG emissions from the Project;

- calculating the GHG emissions from the coal exported via the Project;

- placing the GHG emissions into context in the national and international arenas;

- assessing the potential impact on climate change and the continuing global importance of coal for the world economy; and

- assessing the above in light of the principles of relevant legislation and ESD.

4. GREENHOUSE GAS EMISSIONS ASSESSMENT FRAMEWORK

4.1 International Framework

(a) United Nations Framework Convention on Climate Change (UNFCCC)

The UNFCCC sets an overall framework for intergovernmental efforts to tackle the challenge posed by climate change. It recognizes that the climate system is a shared resource whose stability can be affected by industrial and other emissions of carbon dioxide and other greenhouse gases.

The UNFCCC entered into force on 21 March 1994[1].

Under the UNFCCC, governments:

(i) gather and share information on GHG emissions, national policies and best practices;

(ii) launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and

(iii) cooperate in preparing for adaptation to the impacts of climate change[2].

[1] United Nations, *United Nations Framework Convention on Climate Change: Convention Overview*, <www.unfccc.int/essential_background/convention/items/2627.php> (October 2006).
[2] Ibid.

The UNFCCC does not itself establish binding emissions targets for Parties.

The UNFCCC is a statement of principles. Having regard to the terms of the UNFCCC the fundamental commitment of each nation is aimed at regulating GHG emissions within the party's national boundary. This view is supported by:

(i) the Preamble to the UNFCCC which expressly recognises that:

- it is the sovereign right of Parties to exploit their own resources in accordance with that States' environmental and development policies;
- the principle of sovereignty of States in international cooperation to address climate change;
- States should enact effective environmental legislation, that environmental standards, management objectives and priorities should reflect the environmental and developmental context to which they apply; and
- all countries, especially developing countries, need access to resources required to achieve sustainable social and economic development and that, in order for developing countries to progress towards that goal, their energy consumption will need to grow[3].

(ii) Article 4 of the UNFCCC which states that the Parties have committed to:

(A) develop, periodically update, publish and make available to the Conference of the Parties, in accordance with Article 12, national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, using comparable methodologies to be agreed upon by the Conference of the Parties;

(B) formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, and measures to facilitate adequate adaptation to climate change;

(C) promote and cooperate in the development, application and diffusion, including transfer, of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases not controlled by the Montreal Protocol in all relevant sectors, including the energy, transport, industry, agriculture, forestry and waste management sectors;

(D) promote sustainable management, and promote and cooperate in the conservation and enhancement, as appropriate, of sinks and reservoirs of all greenhouse gases not controlled by the Montreal Protocol, including biomass, forests and oceans as well as other terrestrial, coastal and marine ecosystems;

[3] United Nations, *United Nations Framework Convention on Climate Change: The Convention*, Preamble to the Convention. <http://unfccc.int/essential_background/convention/background/items/2853.php> (October 2006).

(E) cooperate in preparing for adaptation to the impacts of climate change; develop and elaborate appropriate and integrated plans for coastal zone management, water resources and agriculture, and for the protection and rehabilitation of areas, particularly in Africa, affected by drought and desertification, as well as floods;

(F) take climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example impact assessments, formulated and determined nationally, with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change;

(G) promote and cooperate in scientific, technological, technical, socio-economic and other research, systematic observation and development of data archives related to the climate system and intended to further the understanding and to reduce or eliminate the remaining uncertainties regarding the causes, effects, magnitude and timing of climate change and the economic and social consequences of various response strategies;

(H) promote and cooperate in the full, open and prompt exchange of relevant scientific, technological, technical, socio-economic and legal information related to the climate system and climate change, and to the economic and social consequences of various response strategies;

(I) promote and cooperate in education, training and public awareness related to climate change and encourage the widest participation in this process, including that of non- governmental organizations; and

(J) communicate to the Conference of the Parties information related to implementation, in accordance with Article 12[4].

The obligations contained in the UNFCCC are overarching framework principles and objectives. Detailed commitments regarding GHG emissions reduction are contained in the Kyoto Protocol.

(b) **Kyoto Protocol (KP)**

The KP entered into force on 16 February 2005[5].

The KP builds upon the UNFCCC by committing Annex I Parties to individual, legally-binding targets to limit or reduce their GHG emissions for the following GHGs:

- Carbon dioxide (CO_2);
- Methane (CH_4);
- Nitrous oxide (N_2O);

[4] Id, Article 4 of the Convention.
[5] United Nations, *United Nations Framework Convention on Climate Change: Essential Background*, <www.unfccc.int/essential_background/items/2877.php> (October 2006).

- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Sulphur hexafluoride (SF_6).[6]

The emission reduction targets are calculated based on a Party's domestic emissions (such as land use change and forestry clearing, transportation, stationary energy, etc).

To achieve their targets, Annex I Parties must put in place ***domestic policies and measures***[7]. The KP provides an indicative list of policies and measures that might help mitigate climate change and promote sustainable development.

Under the KP, developed countries can use a number of mechanisms to assist in meeting their targets. These include:

- emissions trading between developed countries;
- Joint Implementation (**JI**) - where developed countries invest in greenhouse gas emission reduction projects in other developed countries; and
- Clean Development Mechanism (**CDM**) - where developed countries invest in greenhouse gas emission reduction projects in developing countries.

Only Parties who have ratified the KP will be bound by the KP's commitments.

Australia and the United States are parties to the UNFCCC but have not ratified the KP.

The Federal Government has publicly stated that it does not intend to ratify the KP[8], as it considers ratification to be contrary to Australia's economic interests. However, the presence of the KP has led to Australia's Federal and State Governments to take policy and legal action to respond to the threat posed by global warming. The policy and legal actions contain rules and benefits which are consistent with the emissions reduction objectives of the KP.

Australia is committed to achieving a target of 108% of its 1990 level of greenhouse gas emissions during the first commitment period between 2008 and 2012[9].

Importantly, the KP does not require Parties to include in their respective emissions calculations of the emissions resulting from the export of goods and the subsequent use of those goods within another country.

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[6] United Nations, *United Nations Framework Convention on Climate Change: Kyoto Protocol*, <www.unfccc.int/essential_background/kyoto_protocol/items/3145.php> (October 2006).
[1] Ibid.
[8] Department of Environment and Heritage, Australian Greenhouse Office, *International Activities: Kyoto Protocol*, <www.greenhouse.gov.au/international/kyoto/index.html> (October 2006).
[9] Ibid.

4.2 Methodologies

This report is based upon the methodologies outlined in:

- the World Business Council for Sustainable Development (**WBCSD**) and World Resources Institute (**WRI**) *Greenhouse Gas Protocol* 2004 (**GHG Protocol**);
- the Australian Greenhouse Office (**AGO**) *Factors and Methods Workbook December 2005 (Workbook)* (**AGO Workbook**); and
- the Draft Guidelines *Energy and Greenhouse in EIA*, DoP and NSW Department of Energy, Utilities and Sustainability, 2006 (**Draft NSW EIA Guidelines**).

Each of the GHG Protocol, AGO Workbook and Draft NSW EIA Guidelines contain a methodology for assessing and calculating GHG emissions. The GHG Protocol has been adopted broadly within the international community. This is also reflected in the AGO Workbook and Draft NSW EIA Guidelines which largely adopt the methodology set out in the GHG Protocol.

This report has also been prepared having regard to the NSW Greenhouse Plan published by the NSW Greenhouse Office in November 2005 (**NSW Greenhouse Plan**).

When discussing greenhouse gas emissions in this report reference has been made to both carbon dioxide (CO_2) emissions and carbon dioxide equivalent (CO_2e) emissions. CO_2e allows the conversion of non CO_2 greenhouse gases to CO_2e by multiplying by their Global Warming Potential. For example, methane (CH_4) has a global warming potential of 21 and so one tonne of CH_4 is equivalent to 21 tonnes of CO_2. CO_2e therefore allows the reporting of the various greenhouse gases in a single common unit.[10]

A brief outline of the methodology adopted and the GHG emissions required to be assessed for a project by each of these documents follows.

4.3 The GHG Protocol

The GHG Protocol establishes an international standard for accounting and reporting of GHG emissions by entities.

Chapter 4 is of particular relevance to the issue of the GHG emissions which are required to be assessed for the Project. It deals with operational boundaries.

Under the GHG Protocol the establishment of operational boundaries involves identifying emissions associated with an entity's operations, categorising them as direct or indirect emissions, and identifying the scope of accounting and reporting for indirect emissions.

Three "Scopes" of emissions (Scope 1, Scope 2, and Scope 3) are defined for GHG accounting and reporting purposes. Scopes 1 and 2 have been carefully defined to ensure that two or more entities will not account for emissions in the same Scope.

[10] Australian Greenhouse Office, *Factors and Methods Workbook*, December 2005, Canberra, 36.

(a) **Scope 1: Direct GHG emissions**

Direct GHG emissions are defined as those emissions that occur from sources that are owned or controlled by the entity.[11] Direct GHG emissions are those emissions that are principally the result of the following types of activities undertaken by an entity:

- generation of electricity, heat, or steam. These emissions result from combustion of fuels in stationary sources, e.g., boilers, furnaces, turbines;
- physical or chemical processing. Most of these emissions result from manufacture or processing of chemicals and materials, e.g.: the manufacture of cement, aluminium, adipic acid and ammonia, or waste processing;
- transportation of materials, products, waste, and employees. These emissions result from the combustion of fuels in entity owned/controlled mobile combustion sources, e.g.: trucks, trains, ships, aeroplanes, buses and cars; and
- fugitive emissions. These emissions result from intentional or unintentional releases, e.g., equipment leaks from joints, seals, packing, and gaskets; methane emissions from coal mines and venting; HFC emissions during the use of refrigeration and air conditioning equipment; and methane leakages from gas transport[12].

(b) **Scope 2: Electricity indirect GHG emissions**

Scope 2 emissions are a category of indirect emissions that accounts for GHG emissions from the generation of purchased electricity consumed by the entity.

Purchased electricity is defined as electricity that is purchased or otherwise brought into the organisational boundary of the entity. Scope 2 emissions physically occur at the facility where electricity is generated. Entities report the emissions from the generation of purchased electricity that is consumed in its owned or controlled equipment or operations as Scope 2.

(c) **Scope 3: Other indirect GHG emissions**

Under the GHG Protocol, Scope 3 is an optional reporting category that allows for the treatment of all other indirect emissions.

Scope 3 emissions are defined as those emissions that are a consequence of the activities of an entity, but which arise from sources not owned or controlled by that entity. Some examples of Scope 3 activities provided in the GHG Protocol are extraction and production of purchased materials, transportation of purchased fuels, and use of sold products and services[13].

[11] World Business Council for Sustainable Development and World Resources Institute, *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard*, Revised Edition, 2005, 25.
[12] Id, 27.
[13] Id, 25.

The GHG Protocol provides that reporting Scope 3 emissions is optional[14]. If an organisation believes that Scope 3 emissions are a significant component of the total emissions inventory, these can be reported along with Scope 1 and 2. However, the GHG Protocol notes that reporting Scope 3 emissions can result in double counting of emissions and can also make comparisons between organisations and/or projects difficult because reporting is voluntary. Double counting needs to be avoided when compiling national (country) inventories under the KP. The GHG Protocol also recognises that compliance regimes are more likely to focus on the "point of release" of emissions (i.e., direct emissions) and/or indirect emissions from the use of electricity.

4.4 AGO Workbook

The Department of Environment & Heritage (**DEH**) released the AGO Workbook in December 2005. The AGO Workbook provides current GHG emission factors for Australian organisations to estimate their emissions and abatement.

The emission factors presented in the December 2005 edition of the AGO Workbook have been harmonised with the international reporting framework of the GHG Protocol.

(a) Scope of Emissions to be assessed/calculated

Participants in many AGO programmes are required to report both direct and some indirect GHG emissions.

"Direct Emissions" are defined in the AGO Workbook as:

> **Direct Emissions** are produced from sources within the boundary of an organisation and as a result of that organisation's activities. These emissions mainly arise from the following activities:
>
> - generation of energy, heat, steam and electricity, including carbon dioxide and products of incomplete combustion (methane and nitrous oxide);
> - manufacturing processes, which produce emissions (for example, cement, aluminium and ammonia production);
> - transportation of materials, products, waste and people (for example, use of vehicles owned and operated by the reporting organisation);
> - fugitive emissions: intentional or unintentional greenhouse gas releases (such as methane emissions from coal mines, natural gas leaks from joints and seals); and
> - on-site waste management, such as emissions from company-owned and operated landfill sites.
>
> For example, a company with a car fleet would report greenhouse gas emissions from the combustion of petrol in those motor vehicles as direct emissions. Similarly, a mining company would report methane escaping from a coal seam during mining (fugitive emissions) as direct emissions and a cement manufacturer would report carbon dioxide released during cement production as direct emissions.

[14] Id, 29.

> Emission factors for calculating direct emissions are generally expressed in the form of a quantity of a given greenhouse gas emitted per unit of energy, fuel or a similar measure. Emission factors are used to calculate greenhouse gas emissions by multiplying the factor with the activity data[15].

"Indirect Emissions" are defined in the AGO Workbook as:

> **Indirect Emissions** are emissions generated in the wider economy as a consequence of an organisation's activities (particularly from its demand for goods and services), but which are physically produced by the activities of another organisation. The most important category of indirect emissions is from the consumption of electricity. Other examples of indirect emissions from an organisation's activities include upstream emissions generated in the extraction and production of fossil fuels, downstream emissions from transport of an organisation's product to customers, and emissions from contracted/outsourced activities. The appropriate emissions factor for these activities depends on the parts of upstream production and downstream use considered in calculating emissions associated with the activity.[16]

As discussed above, to achieve harmonisation with the international reporting framework, the AGO Workbook adopts the emissions categories of the GHG Protocol[17] and provides that the scope of emissions that are reported by an entity under the AGO Workbook is determined by whether the activity is within the entity's boundary (direct – Scope 1) or outside it (indirect – Scope 2 and Scope 3).

The AGO Workbook provides that Scope 3 emissions can include:

- disposal of waste generated (e.g. if the waste is transported outside the organisation and disposed of);
- use of products manufactured and sold;
- disposal (end of life) of products sold;
- employee business travel (in vehicles or aircraft not owned or operated by the reporting organisation);
- employees commuting to and from work;
- extraction, production and transport of purchased fuels consumed;
- extraction, production and transport of other purchased materials or goods;
- purchase of electricity that is sold to an end user (reported by electricity retailer);
- generation of electricity that is consumed in a transport and distribution system (reported by end user);
- out-sourced activities; and

[15] Above n 10, 2.
[16] Ibid.
[17] Ibid.

- transportation of products, materials and waste.[18]

4.5 Draft Guidelines Energy and Greenhouse in EIA

The Draft NSW EIA Guidelines were prepared by the New South Wales Department of Energy Utilities and Sustainability (**DEUS**) & DoP and are dated May 2006.

The Draft NSW EIA Guidelines state that it is an advisory document and that its objective "is to provide guidance on the consideration of energy and greenhouse issues developing projects and when undertaking environmental impact assessment (**EIA**) under the *Environmental Planning & Assessment Act 1979*".[19].

(a) Level of Assessment Required

The Draft NSW EIA Guidelines recognise that in the environmental assessment process it is important to consider greenhouse requirements in terms of not just greenhouse impacts, but of resource use efficiency, use of renewable resources and cost delivery.[20]

Section 3.3 deals with the framework for assessment and reporting boundaries for a particular project. The guidelines recognise that in order to estimate energy consumption and emissions, the extent to which these emissions are to be considered needs to be established. These boundaries are not physical but related to the extent to which emissions are associated with "upstream" and "downstream" components of a project and its products need to be considered. The Draft NSW EIA Guidelines adopt the concept of reporting "scopes" as set out in the GHG Protocol, but includes an additional scope of "emission abatement".

The Draft NSW EIA Guidelines define four scopes of emissions as being:

(i) Scope 1: Direct Energy Use or GHG Emissions

Scope 1 considers energy use and GHG emissions that occur on-site or are under a proponent's direct and immediate control. Scope 1 emissions principally consist of, but are not necessarily limited to, the energy use and GHG emissions produced by the following activities:

- production of electricity, heat or steam;
- combustion of fossil fuels for any other purpose;
- physical or chemical processing on-site;
- transportation of materials, products, waste and employees by proponent controlled vehicles;

[18] Id, 3.
[19] NSW Department of Planning and Department of Energy, Utilities and Sustainability, Draft Guidelines: Energy and Greenhouse in EIA, :May, 2006, 1.
[20] Id, 4.

- fugitive emissions occurring on-site (eg intentional or unintentional release eg methane from coal mines, HFC from air conditioning equipment, CH_4 from gas transport);
- on-site landfill wastes or wastewater treatment;
- animal husbandry; and
- on-site vegetation or soil disturbance.

(ii) **Scope 2: Indirect Energy Use or GHG Emissions from Import and Exports of Electricity, Heat or Steam**

Scope 2 principally focuses on the indirect emissions associated with the generation of purchased and imported electricity, heat or steam.

(iii) **Scope 3: Other Indirect Energy Use or GHG Emissions**

Within Scope 3, proponents may report other indirect energy use or GHG emissions that are a consequence of the proposal but do not occur on-site or are removed from the proponent's direct control.

Examples of Scope 3 emissions provided in the Draft NSW EIA Guidelines include energy/emissions implications from:

- off-site waste management eg land filled waste or waste water treatment;
- transportation of products, materials and waste by vehicles not controlled by the proponent;
- employee related business or commuter travel;
- outsourced activities;
- production of imported materials, plant and equipment; and
- use of products or services produced by the project (and end-of-life phases of products).

The Draft NSW EIA Guidelines also consider "upstream" and "downstream" issues. With "upstream" issues (inputs to the project such as materials, plant and equipment), a case by case approach needs to be taken. The energy and greenhouse implications associated with the "processing or handling" of the important material inputs to the project immediately prior to the project may need to be considered. However at this stage it is not considered appropriate or feasible to consider all embedded energy or GHG emissions in materials or other inputs to projects.

With "downstream" issues (outputs from the project in terms of products and waste, or implications in terms of induced use of products, infrastructure or services), the Draft NSW EIA Guidelines provide that a case by case approach needs to be taken. Generally emissions and waste products should be considered (unless being recycled or reused) including any "decomposition" methane sources. In cases where the product is likely to be considered as an "upstream" input for another project, then it may not be necessary to consider it in the assessment of the project. This would avoid double counting[21].

(iv) **Scope 4: GHG Emission Abatement from Offset Opportunities**

Within Scope 4, proponents could report any carbon offsets that have occurred as a direct result of the proposal. Proponents may report on the following activities:

- carbon sequestration performed by the proponents;
- community based energy use or emission reduction initiatives; and
- the use of official government endorsed Kyoto Protocol flexibility mechanisms such as CDM and JI (see section 3.1(b) above).

4.6 **Greenhouse Policy Documents - NSW Greenhouse Plan**

In contrast to the three documents described above, the NSW Greenhouse Plan does not set out a methodology for calculating GHG emissions. Instead, the plan is a policy document which outlines the NSW Government's initiatives in respect of GHG emissions.

In June 2005 the NSW Government announced that over the next 20-45 years, NSW would aim to meet the following GHG emissions reductions targets:

- a 60% cut in greenhouse emissions by 2050; and
- cutting greenhouse emissions to year 2000 levels by 2025[22].

The NSW Greenhouse Plan seeks to:

- raise awareness of climate issues within the broader community;
- recognise that climate change is a global, long-term and complex issue with no easy solution;
- promote understanding of the likely impacts on NSW, and identify strategies for adaptation to environmental, social and economic impacts of climate change;

[21] Id, 19.
[22] New South Wales Greenhouse Office, *NSW Greenhouse Plan*, November 2005 <www.greenhouseinfo.nsw.gov.au> (October 2006) 2.

- limit the growth of greenhouse emissions and reduce these emissions in NSW;
- promote climate change partnerships through cooperative approaches by Government, individuals, industry, business and community groups;
- reduce business uncertainties by establishing carbon constraints in order to promote new investment and innovation; and
- identify key strategic areas for cooperative work with other Australian jurisdictions including the development and establishment of a Kyoto-compliant national emissions trading scheme.[23]

The NSW Greenhouse Plan recognises that while the policies and actions in the plan will put NSW on a path leading towards emission reductions in the order of 50% by 2050, further measures are likely to be required in the future and, that much will depend on the development of new technology and the international policy response. The plan also recognises that there are many emerging technologies that are under development and showing significant promise for delivering large scale emissions reductions. The timeframe for this significant technological innovation is estimated to be 45 years.[24]

Section 3 of the NSW Greenhouse Plan identifies specific initiatives for reducing GHG emissions by sector. Section 3.5 deals with waste, industrial processes and fugitive emissions. One such measure is the development of guidelines for the consideration of GHG emissions in environmental impact assessments. The Draft NSW EIA Guidelines, which are draft guidelines, have been considered in preparing this report.

4.7 NSW Planning Legislation

The Project is required to obtain approval in accordance with the provisions of Part 3A of the *Environmental Planning and Assessment Act 1979* (**EP&A Act),** as administered by the Minister for Planning (**Minister**) and DOP.

The Minister has determined that the Project is one to which Part 3A of the EP&A Act applies.

As a Part 3A project, the Project is required to be environmentally assessed in accordance with the environmental assessment requirements (**EARs**) for the Project as determined by the Director-General (**DG**) in accordance with section 75F (2) of the EP&A Act.

A requirement of the EARs in this case for the preparation of an environmental assessment document (**EA**) by NCIG.

The EARs for the Project contains a general requirement that the EA include "an assessment of the environmental impacts of the project" but there is no specific requirement in the EARs which refers to GHG emissions or ESD principles.

[23] Id, 4.
[24] Id, 19.

The DG formed the opinion, notified to NCIG by letter dated 1 August 2006, that the EA lodged by the NCIG "adequately addressed" the DG's EARs for the Project as required by Section 75H(2) of the EPA Act.

4.8 Outcome of the Assessment Framework

In light of the above discussion and in response to the matters raised in submissions, it is reasonable to pose and answer the question - ***Are the downstream GHG emissions from the burning of coal which is exported via the Project required to be assessed as Scope 3 emissions?***

The following discussion concludes that:

- there is no express legislative or policy requirement to assess such emissions;
- the calculation and assessment of such emissions has practical difficulties; and
- the inclusion of such emissions results in inconsistencies in international GHG emission accounting/reporting.

Each of these reasons is discussed in detail below.

(a) Not required by legislation or policy

The GHG Protocol states that reporting Scope 3 emissions is optional. The GHG Protocol also recognises the importance to avoid double counting. Applying the GHG Protocol to the Project, NCIG was correct in not including GHG emissions from the combustion of coal in its accounting of GHG emissions for the Project.

The Draft NSW EIA Guidelines state that in considering "downstream" emissions a case by case approach needs to be taken. At page 19 it states:

> With "downstream" issues (outputs from the project in terms of products and waste, or implications in terms of induced use of products, infrastructure or services), a case by case approach needs to be taken. Generally emissions and waste products should be considered (unless being recycled or reused) including any "decomposition" methane sources. In cases where the product is likely to be considered as an "upstream" input for another project, then to (sic) it may not be necessary to be considered in the assessment of the project. This would avoid double counting. [our underlining]

The Draft NSW EIA Guidelines distinguish between what are described as a Level 1 Assessment and a Level 2 Assessment. The latter is an assessment of energy and greenhouse issues which involves a higher level of analysis then the Level 1 Assessment.

There is no specific guidance or comment in the Draft NSW EIA Guidelines in respect of coal terminals and how the GHG emissions associated with this type of development are to be assessed. In the absence of specific guidance, it is necessary to fall back on the general principles which are set out at page 19 of that document. Those general principles relevantly provide:

- with "downstream" issues, a case-by-case approach needs to be taken;

- where the product is likely to be considered as an "upstream" input for another activity, it may not be necessary to be considered in the GHG emissions assessment of the Project. This would avoid double counting.

The coal which will be exported via the Project will be either coking coal (to be used in the manufacture of steel) or steaming coal (to be used in the generation of electricity). In both instances, the coal will definitely be, not merely likely be, an upstream input in the GHG inventory for this other activity.

It would be inconsistent with the general principles contained in the Draft NSW EIA Guidelines and result in double counting of GHG emissions, if the emissions from the combustion of the coal were included in the Project's GHG emissions inventory.

The AGO Workbook has adopted the emissions categories of the GHG Protocol in terms of Scope 1, 2 and 3. On Page 2 of the AGO Workbook it states:

> Members of the Greenhouse Challenge Plus programme are required to report separately scope 1 and 2 emissions and the scope 3 emissions they currently report (i.e. emissions from off-site waste disposal, emissions associated with the production of fuels, and emissions from the generation of purchased electricity – see below).Members are also encouraged (but not required) to report other scope 3 emissions.

There is nothing contained in the AGO Workbook which could be construed as mandating the inclusion of emissions from the combustion of exported coal in the GHG emissions inventory for the Project.

(b) **The exclusion of downstream emissions from the combustion of coal is consistent with international instruments relating to GHG emissions counting**

The approach to GHG emissions assessment adopted in the EA is consistent with the methodology adopted under the KP. The KP is concerned with limiting or reducing GHG emissions, not limiting or reducing the production and trade of minerals including coal: see for example, Article 2 (1), Article 3(1), Article 4(1), and Article 5(1). The general obligations of the Parties to promote policies which limit GHG emissions (Article 2(1)(iv)), are solely directed to "achieving [the Party's] quantified emission limitation and reduction commitments (Article 2(1)) and there is no general obligation under the KP to limit or reduce coal mining or export of coal because another country, whether that country is a Party to the KP or not, may produce emissions in burning that coal.

The combustion of the exported coal may ultimately provide an emissions source overseas. The emissions from the combustion of the coal will be subject to domestic regulation and emissions reduction measures in the country where the projects using the coal are situated. It is most effective to regulate emissions from the end use of coal at the point of release of the emissions, and this is what the KP addresses.

(c) **Practical Issues**

There are a number of practical difficulties and anomalies associated with the inclusion of downstream or Scope 3 emissions in the assessment for the Project. These include:

(i) it is not possible to accurately predict what the GHG downstream emissions from the combustion of the coal will be and where they will occur. The best that can be done is an crude calculation which assumes that the exported coal will be combusted in circumstances without clean technology, abatement measures or offsets;

(ii) there will necessarily be double counting and even triple counting, if our Project opponents contend, the GHG emissions from the combustion of the coal should also be included in the Scope 3 GHG Inventories for the mines which produce the coal.

(iii) the mere operator of a terminal is unable to influence the final use of the product including emissions avoidance, efficiency, waste minimization or offsets; and

(iv) the concept of assessing downstream environmental impacts of the use of coal which is exported via the Project is inconsistent with the normal planning assessment process in NSW. The process is concerned with the impacts of a proposed project and not the derivative impacts of the use of an exported product.

The use of a project's product, or throughput in the case of a terminal, is assessed and regulated by the controls that apply at the downstream point of use.

The ad hoc introduction of "use of product" or assessment in the environmental assessment process for a proposed project introduces inconsistency and crude speculation into the environmental assessment process. Moreover, it is unnecessary because the use of the actual product is regulated at the downstream point of use.

4.9 **An assessment of Scope 3 emissions**

Notwithstanding that there is no requirement for the EA to provide an assessment of Scope 3 emissions, a calculation of the "downstream" emissions that could result from the burning of all coal exported via the Project is discussed at section 5 below.

5. GREENHOUSE EMISSIONS

This section includes the following:

- a calculation of the annual GHG emissions for the Project in accordance with recognised assessment guidelines; and
- a calculation of the annual GHG emissions from the combustion of the coal exported via the Project.

5.1 Annual GHG emissions for the Project

Appendix B of the EA contains the calculation of the GHG emissions for the Project. It is worth noting that the NCIG Project is a coal export terminal only. The Project does not produce nor consume coal and is considered a means of transportation for the coal (similar to rail/shipping transportation).

The Project will liberate GHG as a result of the combustion of diesel and petrol to power equipment and the use of electrical energy both during the construction and operational phases.

At 66Mtpa throughput of coal, the Project is estimated to liberate approximately 69,760+ of CO_2-e per annum.

5.2 Annual GHG emissions from the combustion of coal exported via the Project

The Project seeks approval for a maximum annual throughput of 66Mtpa.

Scope 3 emissions from the combustion of coal exported via the Project have been calculated based on an average coal energy content of 27 GJ/tonne. The standard emissions factors for coal combustion have been taken from the AGO Workbook for combustion of fuel. Assuming that all coal exported via the Project is consumed by and burned by the end users and that the Project is operating at full capacity of 66Mtpa, the GHG emissions from the combustion of coal are estimated to be 161M TCO_2e per annum.

Of course, this crude calculation assumes no application of clean emissions technology or abatement measures.

6. GLOBAL EMISSIONS COMPARISON

In order to place the emissions from the Project and the emissions from the combustion of the potentially exported coal into a broader context, both current and global GHG emissions are discussed below.

6.1 Global greenhouse emissions estimate – annual and over next 21 years

In 2004, Australia's net GHG emissions using the accounting provisions applying to Australia's 108% emissions target were estimated to be 0.5647 giga tonnes of carbon dioxide equivalent[25]. (AGO 2006, p.1)

In 2005, global emissions of carbon dioxide exceeded 25 giga tonnes of carbon dioxide. In 2010, global emissions of carbon dioxide are expected to be approximately 30 giga tonnes[26].

[25] Above, n 48, 15.

[26] United National Environment Program, GRID – Arendal Library of Graphic resources, *Carbon Dioxide Emissions Globally and From Annex 1 Countries (COP 7)* <www.maps.grida.no> (19 October 2006).

It is forecast by the IPCC that emissions of carbon dioxide will increase to approximately 47 giga tonnes in 2030[27].

6.2 Relative contribution of Project to total GHG emissions

As identified in section 5.1 above, GHG emissions for the Project, when it is operating at maximum throughput of 66Mtpa, are estimated to be approximately 69,760 TCO_2e per annum.

On the basis of the above estimates, the CO_2 equivalent emissions for the Project would be around 0.000233% of the total global emissions of carbon dioxide[28] in 2010, and around 0.000148% of the total emissions of carbon dioxide in 2030.

As identified in section 5.2 above, the GHG emissions from the burning of coal from the Project when it is operating at full capacity of 66Mtpa are estimated to be approximately 161M TCO_2e per annum.

7. IMPACT ASSESSMENT - SEA LEVEL RISE, CLIMATE, VEGETATION, WATER SUPPLY

Submissions assert that environmental impacts from climate change should have been considered in the Project EA. These impacts are discussed below.

Climate change involves complex interactions between climatic, biophysical, social, economic, institutional and technological processes. The weight of scientific opinion supports the proposition that the world is warming due to the release of emissions of carbon dioxide and other GHGs from human activities including industrial processes, fossil fuel combustion, and changes in land use, such as deforestation[29].

Since 1751 roughly 305 billion tonnes of CO_2 have been released into the world's atmosphere from the consumption of fossil fuels and cement production. Of these emissions, half have occurred since the mid 1970s.

The Earth has warmed by 0.6º (plus or minus 0.2ºC) on average since 1900[30]. This warming is predicted to have environmental consequences for the world apart from the fact of average temperature increase itself. It is predicted that a continuation of historical trends of GHG emissions will result in additional warming over the 21st century, with current projections of a global increase of between 1.4ºC to 5.8ºC by 2100[31]. The environmental consequences of such a temperature rise are less certain, but is likely to include additional sea-level rise (due to polar ice cap melting), changes in precipitation patterns, increased risk

[27] Intergovernmental Panel on Climate Change, *Climate Change 2001: Synthesis Report – Summary for Policymakers*, IPCC Third Assessment Report, 2001. *Please note that these are CO2 emissions and so exclude non CO2 ghg.
[28] Ibid.
[29] Pew Center on Global Climate Change , *Global Warming Basics* <www.pewclimate.org/global-warming-basics/index> (19 October 2006).
[30] CSIRO Factsheet, *Climate Change: Projections for Australia*, 2001 <www.dar.csiro.au/publications/projections2001.pdf> (October 2006)
[31] Above, n 60.

of droughts and floods, threats to biodiversity and a number of potential challenges for public health[32].

Even if GHG concentrations were stabilised today, scientific data indicates that the heat that is already in the ocean will warm the atmosphere over time, resulting in an additional 0.6°C of warming by the end of the 21st century.[33]

7.1 Climate change projections for Australia

(a) Climate

Scientists have calculated that the earth's average surface temperature is likely to rise by 1.4° to 5.8°C by the year 2100 relative to 1990. This is a warming rate of 0.1° to 0.5°C per decade.[34]

In Australia, the climate has been projected to become warmer and drier[35]. By 2030, the warming is projected to be about 0.4° to 2°C over most of Australia, with slightly less warming in some coastal areas and Tasmania, and slightly more warming in the north-west. By 2070, annual average temperatures are projected to increase by 1° to 6°C over most of Australia with spatial variations similar to those for 2030.[36] Inland areas are likely to warm faster than the global average. There is also projected to be more variation in rainfall patterns. Where average rainfall increases, there are likely to be more extremely wet years, and where average rainfall decreases, more droughts are anticipated. Less snowfall and greater fire risk are also likely.[37]

(b) Flora and Fauna

Climate change has been identified as one of numerous pressures on the world's wildlife. Research shows that it has led to approximately 25% of the world's mammals and 12% of birds being at significant risk of extinction[38]. Some species have migrated both pole-wards and to high elevations to escape warmer conditions[39]. A study of the likely impact of climate change on flora and fauna concluded that minimal climate-warming scenarios for 2050 could lead to extinction of approximately 18% of species[40]. Mid-range and maximum warming could lead to extinction of 24% and 35% of species respectively by 2050.[41]

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[32] Ibid.
[33] Pew Center on Global Climate Change and the Pew Centre on the State, *Climate Change 101: Understanding and Responding to Global Climate Change – The Science and Impacts*, 2006 <www.pewclimate.org> (October 2006), 1.
[34] Above, n 63.
[35] Above, n 22, 8.
[36] Ibid.
[37] Ibid.
[38] Australian Greenhouse Office, Department of the Environment and Heritage, *Hot Topics in Climate Change Science: Species Extinctions Will Increase Due to Global Warming*, Topic 11, April 2005 <www.greenhouse.gov.au/science/hottopics> (October 2006)
[39] Ibid.
[40] Ibid.
[41] Ibid.

Australian research has predicted that the bio-climates of some species of plants and vertebrates will disappear with a warming of just 0.5-1.0°C.[42]

Warmer conditions associated with climate change have contributed to the movement of many animals and plants. Rapid warming and other stresses such as habitat destruction could possibly lead to extinctions of some species.[43]

(c) **Sea level**

Sea level is projected to rise by 9 to 88 centimetres by 2100, or 0.8 to 8.0 centimetres per decade, as a result of global warming. The observed rise over the 20th century has been 1 to 2 centimetres per decade.[44]

Sea-level rise will have impacts on soft sediment shorelines and intertidal ecosystems, which will be especially vulnerable to change with additional impacts from extreme events. The interaction of severe weather events, such as tropical cyclones, with the coastal ocean has the potential to generate severe waves and storm surge, which in turn can have significant impacts on the coast. Low-lying coastal terrain may become inundated, beaches eroded, coastal infrastructure damaged or destroyed, and people injured or killed. Warmer ocean waters and sediment transport following heavy rainfall will affect fisheries and coastal ecosystems.

(d) **Water supply**

Climate change may result in changes to rainfall patterns, run-off patterns and river flow.

(e) **Rainfall**

Projections for annual average rainfall in Australia for around 2030 and 2070, relative to 1990 include:

- a trend toward decrease in the south-west (-20% to +5% by 2030 and -60% to +10% by 2070);
- in parts of the south-east and Queensland (-10% to +5% by 2030 and -35% to +10% by 2070);
- most other locations show changes which vary from -10% to +10% by 2030 and -35% to +35% by 2070;
- decreases are most pronounced in winter and spring;
- some inland and eastern coastal areas may become wetter in summer, and some inland areas may become wetter in autumn; and

[42] Ibid.
[43] Ibid.
[44] Above, n 63.

- where average rainfall increases, there are predicted to be more extremely wet years and where average rainfall decreases there would be more dry spells[45].

Most models simulate an increase in extreme daily rainfall leading to more frequent heavy rainfall events and flooding. This occurs where average rainfall increases and can occur where average rainfall decreases slightly. Reductions in extreme daily rainfall occur where average rainfall is predicted to significantly decline.

Higher temperatures are likely to increase evaporation[46]. When this is combined with the projected changes in rainfall, there would be a decrease in available moisture.[47]

A 2 ºC rise in temperature in Australia would be likely to have a number of negative environmental impacts such as the regular bleaching of near-shore coral reefs and a reduction in the total area in which some plants and animals naturally occur, particularly in the Southern Alps. Above a 2 ºC rise, the risk of more severe impacts becomes high, including a 12-25% reduction in river flow in the Murray Darling Basin.[48]

Mean relative sea-level rise (including land movement) around Australia of about 1.2mm/year was recorded over the period 1920 to 2000.[49]

7.2 Climate change projections for NSW

From 1950 to 2003, the NSW annual mean maximum temperature rose 0.15°C/decade and the NSW annual mean minimum temperature rose 0.19°C/decade. There has been an increase in hot days (35°C or more) of 0.10 days per year, an increase in hot nights (20°C or more) of 0.26 nights per year, a decrease in cold days 15°C or less) of 0.22 days per year and a decrease in cold nights (5°C or less) of 0.29 nights per year[50].

Projections of climate change in NSW were undertaken for the NSW Government by the CSIRO and Bureau of Meteorology, and are reported in the NSW Greenhouse Plan. It was concluded that without action to limit global GHG emissions, NSW can expect:

- a warming of between 0.2-2.1ºC over the next 3 decades (with the greatest rise in spring and summer) and a warming of 0.7-6.4ºC by 2070; and

- a general tendency for decreasing annual average rainfall, particularly in spring and particularly in south western NSW.[51]

[45] Id, 6.
[46] Ibid.
[47] Id, 2.
[48] Id, 11.
[49] Ibid.
[50] Hennessy, K., McInnes, K., Abbs, D., Jones, R., Bathols, J., Suppiah, R., Ricketts, J., Rafter, T., Collins, D. and Jones, D., *Climate Change in New South Wales Part 2: Projected Changes in Climate Extremes,* CSIRO Consultancy Report prepared by CSIRO for the NSW Greenhouse Office, November 2004, 67.
[51] Above, n 22, 9.

In parts of NSW, some agricultural and forestry activities may benefit from small temperature and carbon dioxide increases, because of the improvements in plant growth that may result. However, most changes in average and extreme climate are expected to have negative impacts on natural ecosystems, water resources, primary industries, human health and settlements.[52]

Hotter, dry conditions are likely to put crops under greater heat and water stress. Rivers are likely to decline, making irrigation less reliable and shrinking natural wetlands. Rising temperatures will reduce the available habitat for alpine species such as the Mountain Pygmy Possum.[53]

Major storms may become more common over much of NSW which may lead to an increased risk of damage to buildings, bridges and power lines. In the coastal zone, these storms may combine with the rise in the sea level to worsen coastal erosion, damaging beaches and improvements. Bushfires are likely to become more frequent and intense. Human health also faces risks, which warmer temperatures increasing the risk of infectious diseases, food poisoning and mosquito-borne diseases.[54]

8. ABATEMENT MEASURES

8.1 Project-related

NCIG will assess and implement, where possible, energy and greenhouse management initiatives during the various phases of the Project. Some of the opportunities available to NCIG for improving energy efficiency and reducing greenhouse emissions from the Project are:

- regular on-site energy audits to optimise energy efficiency and minimise energy consumption;
- consideration of energy efficiency in plant and equipment selection/purchase (e.g. fuel efficient vehicles and air-conditioning/refrigeration unit energy ratings);
- avoiding unnecessary usage of high energy consuming plant and equipment items;
- minimising operation interruptions (i.e. start-up/shutdown);
- consideration of energy efficient lighting (e.g. automatic luminosity control and avoiding use of non-essential lighting);
- regular maintenance of plant and equipment to minimise fuel consumption and associated emissions;
- planting of native vegetation as part of visual screens in select locations around the Project site;

[I] Id, 10.
[53] Ibid.
[54] Ibid.

- installation of solar-powered monitoring equipment and other instrumentation where practicable.

During the life of the Project evolving technologies and opportunities will also be reviewed and incorporated where viable.

9. JUSTIFICATION

If the GHG emissions of the Project when operating at maximum capacity are considered, the Project equates to 0.000233% of the total global emissions of carbon dioxide as at 2010. Although insignificant in a global context, it may be argued that the GHG emissions may contribute to climate change. However, in assessing any impact there must be consideration of the benefits bought by the Project. A range of benefits including economic, social and employment are discussed in the EA. There are other benefits to the global community through the provision of energy to assist in developing countries and to maintenance of life quality in other countries. Energy is supplied to meet market demand and both Australian and global energy demand predictions are that there is continuous growth in energy demand into the future.

9.1 Global Population Growth and Energy Demand

Global population is projected to grow from approximately 6.5 billion in 2005 to approximately 7.8 billion in 2025, representing an annual average growth of 0.9 per cent a year over this period[55]. The population projections for China and India alone in 2025 are 1.5 billion and 1.4 billion respectively[56]. These increases in population, resulting in a steadily expanding global economy, are forecast to underpin large increases in energy and electricity demand, particularly in regions that are projected to experience fast growth in gross domestic product per person such as India and China[57].

ABARE has recently calculated that total world energy consumption is projected to increase at an average rate of 2 per cent a year between 2005 and 2025, to reach 14.5 billion tonnes of oil equivalent. Asia is expected to account for much of the increase in world energy consumption.

Over this period, while growth in consumption of non-fossil fuel sources of energy will be strong, with renewable, nuclear and hydroelectricity technologies growing at average annual rates of 6.6 per cent, 1.3 per cent and 2.3 per cent respectively between 2005 and 2025, growth in world coal consumption is projected to grow at an average annual rate of 2.1 per cent between 2005 and 2025. As a result of these trends, coal's share in the global energy mix is projected to rise slightly from 27.8 per cent to 28.1 per cent over the period 2005 to 2025.

[55] Id, 25.
[56] Ibid.
[57] Ibid.

9.2 Renewable Technologies

Renewable and low emission technologies, including fuel cells, solar cells, biomass and coal seam methane, do not make a significant contribution to global energy production. While the lower greenhouse emissions of renewable and low emission options make them attractive, some of them have technical limitations as the energy source they rely on is not controllable (eg. wind or solar). This is important because electricity cannot currently be stored in large volumes, so it needs to be produced on demand. For example, wind energy is intermittent in nature. Similarly, solar energy can only be produced during the day and is sensitive to weather conditions. To ensure reliability, these technologies currently need to be supported by complementary generation capacity which can ensure demand is met at all times.

9.3 Fuel Mix

On a global scale, black coal is expected to remain the most widely used fuel for electricity generation over the period to 2025[58]. Below is a table showing the projected share of electricity generation by fuel type prepared by ABARE.

[58] Id, 27.

Table 3: share of electricity by fuel specific technologies for selected GTEM regions, reference case[59]

	brown coal		black coal		oil	
	2005 %	2025 %	2005 %	2025 %	2005 %	2025 %
Australia	21.6	18.6	54.3	51.8	1.3	1.1
Japan	0.0	0.0	29.3	26.0	10.7	3.6
North America	3.2	2.8	41.9	40.8	3.5	3.1
European Union	10.6	10.7	21.1	21.4	4.8	2.8
Russian Federation	7.5	5.1	11.5	11.4	3.1	3.5
ASEAN	3.5	1.2	22.2	28.1	12.6	6.0
China	0.0	0.0	76.9	61.6	2.5	0.9
Korea, Rep of	0.0	0.0	40.6	32.1	5.1	3.2
Chinese Taipei	0.0	0.0	56.8	55.6	2.5	1.6
India	2.5	2.2	63.3	50.0	4.1	3.5
Middle East	0.0	0.0	5.1	4.1	33.4	25.7
Other developing	4.1	3.7	15.9	12.76	9.3	7.3
World	4.3	3.2	36.0	34.5	6.2	4.7

	gas		nuclear		other	
	2005 %	2025 %	2005 %	2025 %	2005 %	2025 %
Australia	14.8	20.0	0.0	0.0	8.0	8.5
Japan	24.4	25.0	24.6	33.5	11.1	11.9
North America	17.9	25.0	17.8	13.4	15.7	15.0
European Union	18.8	27.6	30.7	16.5	13.9	20.9
Russian Federation	43.5	47.7	16.6	16.9	17.8	15.4
ASEAN	46.8	47.2	0.0	0.9	15.0	16.7
China	2.3	9.6	2.9	7.9	15.5	20.0
Korea, Rep. of	14.6	10.2	38.1	49.7	1.7	4.8
Chinese Taipei	21.1	20.2	16.7	14.7	3.0	7.9
India	11.4	15.2	4.9	13.5	13.7	15.6
Middle East	48.8	54.6	0.2	0.5	12.5	15.1
Other developing	23.6	34.6	7.2	4.7	39.8	37.0
World	20.2	26.1	15.6	11.8	17.7	19.7

[59] Id, 26.

9.4 Global Coal Consumption

In parallel with growing energy demand, world black coal consumption is projected to increase by 2.1 per cent a year between 2005 and 2025 to reach 7.5 billion tonnes in 2025. Thermal coal is projected to account for 81 per cent of the increase in coal consumption worldwide, growing at an average annual rate of 2.1 per cent. This growth is driven in large part by significant growth in coal consumption for electricity generation in the developing Asian region, primarily in China, India and the ASEAN region[60].

In developing Asia, growth in coal consumption is projected to rise at an average annual rate of 2.9 per cent to reach 4.3 billion tonnes in 2025[61].

Global Coal Consumption

Source	Tonnes of Coal	Estimated TCO_2e	Year
IEA WEO 2004	4,791,000,000	12,638,178,900	2002
IEA Key 2006	4,973,000,000	13,118,276,700	2005
IEA WEO 2004	7,029,000,000	18,541,799,100	2030

9.5 Projected Coal Production

Below is a table prepared by ABARE which shows projected coal production for the period 2005 – 2025:

[60] Ibid.
[61] Ibid.

Table 4 Coal production: Selected key producers[62]

	share of world production 2005 %	2005 Mt	production 2025 Mt	average annual growth 2005-25 %
China	42	2 100	3 477	2.6
United States	19	950	1 187	1.1
India	8	398	718	3.0
Australia	6	301	464	2.2
South Africa	5	240	307	1.2
European Union	3	167	185	0.5
Russian Federation	4	222	284	1.2
Rest of Commonwealth of Independent States	3	139	176	1.2
Indonesia	3	150	250	2.6
Rest of world	6	315	527	2.6
World	100	4 980	7 557	2.1

Australia is the world's largest exporter of black coal and the fourth largest producer (behind China, the United States and India). In 2005 Australia had coal exports of 233 Mt, which accounted for around a third of world coal trade[63]. Australian coal is exported to a number of different regions around the world, including South East Asia, China, Japan and the EU.

Australian saleable black coal production increased to 299 Mt in 2005[64].

Australia has more than 74 billion tonnes of identified black coal reserves.[65] There are 16 billion tonnes of recoverable EDR of black coal in NSW, accounting for 39 per cent of total recoverable EDR of Australian black coal[66]. By contrast, China is the world's largest coal producer, with an estimated 114 billion tonnes of proved coal reserves at the end of 2004, accounting for 12.6 per cent of global proved reserves (BP 2005).[67]

The NSW resource is located predominantly in the Sydney–Gunnedah basin that extends from south of Wollongong to north of Newcastle and north westerly through Narrabri into Queensland[68].

Growth in global coal consumption over the period to 2025 will be influenced by a number of key drivers, including economic growth and changes in the pattern of output, population trends, fuel choices made by individual economies to meet their future energy needs, and relative price movements of competing fuels[69].

[62] Id, 30.
[63] Id, 16.
[64] Id, 17.
[65] Australian Coal Association, *Black Coal Resources* <www.australiancoal.com.au/resources.htm> (19 October 2006)
[66] Above, n 102, 17.
[67] Id, 41.
[68] Id, 17.
[69] Id, 23.

With the predicted growth in global demand for export coal and the abundance of black coal reserves in NSW, Queensland and elsewhere in the world, it is certain that if the Project is not developed the demand for coal would be met by another project either in NSW or in Queensland, and from overseas mines and associated terminals if the coal is not exported via the Project.

This non-development of the Project would represent a loss to both the NSW and Australian economies with no concomitant reduction in global GHG emissions.

10. ECOLOGICALLY SUSTAINABLE DEVELOPMENT

10.1 Concepts

In NSW, ecologically sustainable development (**ESD**) has been incorporated into many pieces of legislation. The objectives to the *Protection of the Environment Administration Act 1991* (NSW) (**POEA Act**) provide that the objectives of the Authority are:

> (a) to protect, restore and enhance the quality of the environment in New South Wales having regard to the need to maintain ecologically sustainable development ….

Section 6(2) provides that ESD requires the effective integration of economic and environmental considerations in decision making processes. ESD can be achieved through the implementation of the following principles and programmes:

> (a) the precautionary principle – namely, that if there are threats of serious of irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
>
> In the application of the precautionary principle, public and private decision should be guided by:
>
> (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment;
>
> (ii) an assessment of the risk-weighted consequences of various options;
>
> (b) inter-generational equity-namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations;
>
> (c) conservation of biological diversity and ecological integrity-namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration;
>
> (d) improved valuation, pricing and incentive mechanisms-namely, that environmental factors should be included in the valuation of assets and services, such as:
>
> (i) polluter pays – that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement;
>
> (ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste;

(iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits of minimise costs to develop their own solutions and responses to environmental problems.

The principles of ESD, as set out in section 6(2) of the POEA Act, are adopted by the *Environmental Planning and Assessment Act 1979 (NSW)* (**EPA Act**)[70]. The objects of the EPA Act are:

(a) to encourage:

(i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment;

(ii) the promotion and co-ordination of the orderly and economic use and development of land;

(iii) the protection, provision and co-ordination of communication and utility services;

(iv) the provision of land for public purposes;

(v) the provision and co-ordination of community services and facilities;

(vi) the protection of the environment, including the protection and conservation of native animals and plants, including threaten species, populations and ecological communities and their habitats;

(vii) ecologically sustainable development; and

(viii) the provision and maintenance of affordable housing;

(b) to promote the sharing of the responsibility for environmental planning between different levels of government; and

(c) to provide increased opportunity for public involvement and participation in environmental planning and assessment.

In recognition of the importance of ESD, the project design, planning and assessment for the Project have been conducted in accordance with the principles of ESD.

10.2 Precautionary Principle

In *Telstra Corporation Limited v Hornsby Shire Council* [2006] NSWLEC 133 (**Cheltenham Decision**), Preston CJ considered whether ESD and the precautionary principle were relevant considerations for a consent authority when making a determination under section 79C(1) of the EP&A Act.

In his judgment, Preston CJ highlighted six key elements of ecologically sustainable development, one such being the precautionary principle. Preston CJ held that the precautionary principle is to *only* be applied when two thresholds are met:

[70] Section 4, *Environmental Planning and Assessment Act* 1979.

(a) there is a threat of serious or irreversible environmental damage:

- this requires a consideration of many factors, and consultation with experts and relevant stakeholders and right holders; and
- where the threat of environmental damage is negligible, the precautionary principle cannot apply (citing for example *Hutchison Telecommunications (Australia) Pty Limited v Baulkham Hills Shire Council* [2004] NSWLEC 104),

(b) there is scientific uncertainty as to the nature and scope of the threat of environmental damage:

- The degree of scientific uncertainty required is at least a "considerable" scientific uncertainty[71].

Once the two thresholds are met, the burden shifts to the proponent of the development to demonstrate that there is no threat, or that the threat is negligible[72]. Thus, Preston CJ noted that the function of the precautionary principle is to shift the burden of proof to require a developer to address the threat of serious or irreversible environmental damage, notwithstanding that there is scientific uncertainty about the threat.

In applying the precautionary principle, the measures adopted should be proportionate to the potential threats. Preston CJ cited the definition of the precautionary principle in section 6(2)(a) of the *Protection of the Environment Administration Act 1991*. Further, he described this process as a cost-benefit analysis of the various options and the degree of precaution to be provided for the risks identified.

10.3 The Global Demand for Energy

Sustainable development is often defined as 'development that meets the needs of the present, without compromising the ability of future generations to meet their own needs'.

Sustainable development encompasses three basic and inter-related objectives:

- economic security and prosperity;
- social development and advancement; and
- environmental sustainability.

Minerals-based industrial materials and the provision of adequate, reliable and affordable energy are essential to meeting the needs and aspirations of people in both developed and developing countries. Access to energy remains a critical development need, particularly for the one-third of the world's population without electricity.

[71] *Telstra Corporation Limited v Hornsby Shire Council* [2006] NSWLEC 133, paragraph 128.
[72] *Telstra v Hornsby*, paragraph 150.

All fossil fuels, including coal, oil and natural gas, are finite resources. While coal is by far the most abundant fossil fuel, the use of any finite resource is, by definition, unsustainable in the long-term. The modern global economy, however, is heavily dependent upon the use of finite resources, and this will only change gradually as resources decline and new economic activities and technologies emerge.

In the context of sustainable development, the question is not whether coal will play a role, but rather how we can continue to enjoy the many economic and social benefits associated with its use, while at the same time reducing or eliminating environmental impacts. Based on projected strong growth in global demand for energy of all types, coal will continue to be an essential part of the world's energy and industrial materials mix for the foreseeable future. Considering current energy sources, there would need to be a dramatic change in the global demand for energy, and associated acceptance of a shift in standard of living, for there to be a significant reduction in global demand for coal.

10.4 Social Equity (Inter- and intra-generational issues)

The Project aims to meet the principles of social equity by implementing management strategies that effectively mitigate risks of environmental degradation, thus retaining options for future generations with regard to the use of natural resources.

The Project meets the principles of inter-and intra-generational equity by:

- incorporation of risk assessment and analysis at various stages in the Project design and environmental assessment and within decision-making processes;
- adoption of high standards for environmental and occupational health and safety performance;
- consultation with regulatory and community stakeholders;
- optimisation of the economic benefits to the community arising from the development of the Project;
- management measures to be implemented in relation to the potential impacts of the Project during construction and operation on land resources (land contamination), water resources, visual amenity, noise, air quality, flora and fauna, transport, hazards and risks and socio-economics;
- implementation of environmental management and monitoring initiatives to minimise potential environmental impacts (which include environmental management and monitoring programmes covering the Project life); and
- implementation of a programme of compensatory measures during the life of the Project to compensate for potential ecological impacts that have been identified for the on-site development.

In particular, the Project would benefit current and future generations through the generation and maintenance of employment (direct employment of up to 500 people during construction of the Project and 100 people during Project operations). Flow-on employment effects, particularly during Project operations would also be significant.

Employment and expenditure associated with the Project is also predicted to have significant flow-on effects in the regional economy. The Socio-Economic Assessment in the EA indicates that the construction of the Project is likely to lead to the creation of some 587 direct and indirect jobs in the Newcastle economy. Similarly, the operation of the Project at full capacity (66 Mtpa) is predicted to generate up to 351 direct and indirect jobs in the Newcastle economy.

10.5 Biodiversity and Ecological Integrity Issues and Greenhouse Emissions

GHG is widely accepted as a contributor to global warming. The effects of global warming are tangible in Australia as well as internationally. The average surface temperature of Australia has increased by 0.7 ºC over the past century. Research indicates that even if all GHG emissions ceased today, the earth would still be committed to an additional warming of 0.2 – 1.0 ºC by the end of the century[73].

The momentum of the world's fossil fuel economy precludes the elimination of GHG emissions over the near-term, and thus future global warming is likely to be well above 1ºC.[74]

A specific long-term stabilisation target has not been adopted by the UNFCCC.

Natural ecosystems are considered to be vulnerable to climate change. Patterns of temperature and precipitation are key factors affecting the distribution and abundance of species.[75] Projected changes in climate will have diverse ecological implications. Habitat for some species will expand, contract and/or shift with the changing climate, resulting in habitat losses or gains, which could prove challenging, particularly for species that are threatened or endangered.

"Anthropogenic Climate Change" is listed as a key threatening process in Schedule 3 to the *Threatened Species Conservation Act 1995* (NSW) In making its final determination to list anthropogenic climate change as a key threatening process, the Scientific Committee found that:

> 1. The distribution of most species, populations and communities is determined, at least at some spatial scale, by climate.
>
> 2. Climate change has occurred throughout geological history and has been a major driving force for evolution.

[73] Preston, B., and Jones, R., *Climate Change Impacts on Australia and the Benefits of Early Action to Reduce Global Greenhouse Gas Emissions*, A CSIRO Consultancy Report for the Australian Business Roundtable on Climate Change, 2005 <www.csiro.au> (October 2006), 5.
[74] Ibid.
[75] Id, 21.

> 3. There is evidence that modification of the environment by humans may result in future climate change. Such anthropogenic change to climate may occur at a faster rate than has previously occurred naturally. Climate change may involve both changes in average conditions and changes to the frequency of occurrence of extreme events.
>
> 4. Response of organisms to future climate change (however caused) is likely to differ from that in the past because it will occur in a highly modified landscape in which the distribution of natural communities is highly modified. This may limit the ability of organisms to survive climate change through dispersal (Brasher & Pittock 1998; Australian Greenhouse Office 1998). Species at risk include those with long generations, poor mobility, narrow ranges, specific host relationships, isolate and specialised species and those with large home ranges (Hughes & Westoby 1994). Pest species may also be advantaged by climate change.[76]

The proposed development meets biodiversity and ecological integrity principles by proposing an environmental management framework and operating under a site management plan designed to conserve, wherever possible, ecological values and long-term species diversity. This is achieved through measures as follows:

- Project infrastructure would be designed to minimise impacts on the existing environment where practicable. For example, dust controls would be employed to minimise potential impacts on surrounding vegetation. Further details of how the Project infrastructure would be designed to minimise impacts on the environment, including potential impacts on threatened species, are provided in Sections 4.8 and 4.9 of the EA.

- Proven operating systems and pollution control structures would be applied where practicable. The potential for environmental degradation would be minimised through training of personnel, environmental auditing and the development of contingency plans in case of an emergency which is likely to impact on the environment. Environmental monitoring would be undertaken to determine whether the environmental control measures are operating effectively. Further details of environmental management and monitoring are provided in Section 4 of the EA.

- The Project includes a programme of compensatory measures to address on-site impacts. The existing compensatory habitat proposed by the NSW Government (e.g. Big Pond Habitat Offset Scheme) was taken into consideration during development of these compensatory measures. The Project would contribute towards habitat enhancement/creation for flora and fauna as well as towards research into relevant threatened species. Contributions would also be made to the Kooragang Wetland Rehabilitation Project and other non-government organisations for relevant environmental management and research. Further discussion of the compensatory measures is provided in Sections 4.8.4 and 4.9.4 of the EA.

[76] The National Parks and Wildlife Service, NSW Department of Environment and Conservation, *Human-Caused Climate Change – Key Threatening Process Declaration*, 16 December 2004, <www.nationalparks.nsw.gov.au> (5 October 2006).

- It is recognised that the nominal conservation values existing within the Project site can be enhanced only minimally given the degraded condition of the existing environment. However, greater ecological resilience can be built into the surrounding areas by the application of the Project initiatives, thereby enhancing biodiversity and ecological integrity. Accordingly, the Project would enable inter-generational wealth to be utilised to improve adjacent environments using the compensatory measures detailed above.

11. CONCLUSION

The discussion in this document leads to the following conclusions:

On a global level the demand for coal is forecast to increase over the next 15-20 years.

Global population is projected to grow from approximately 6.5 billion in 2005 to approximately 7.8 billion in 2025. ABARE has recently calculated that total world energy consumption is projected to increase at an average rate of 2% a year between 2005 and 2025, to reach 14.5 billion tonnes of oil equivalent.

The developing Asian region is expected to account for much of the increase in world energy demand. Over this period, while growth and consumption of non-fossil fuel sources of energy is predicted to be strong, with renewable, nuclear and hydro electricity technologies growing, growth in world coal consumption is projected to grow at an average annual rate of 2.1% between 2005 and 2025.

Given the projected strong growth in global demand for energy, coal will continue to be an essential part of the world's energy materials mix supplemented by nuclear, renewable and low emission technologies, as the latter become more reliable and affordable.

Australia is the fourth largest producer of coal in the world.

With the predicted growth in demand for coal globally and the abundance of coal reserves in NSW, Queensland and elsewhere in the world, it is certain that if the Project was not developed, this demand for coal would be met by another project either in NSW, in Queensland or overseas.

The weight of scientific opinion supports the proposition that the world is warming due to the release of emissions of carbon dioxide and other GHGs from human activities, including industrial processes, fossil fuel combustion, and changes in land use, such as deforestation and land clearing.

Ceasing the use of coal in order to cut GHG emissions is not a realistic option for the foreseeable future. For at least the foreseeable future, coal will remain a vital energy source for electricity generation in the world.

In the context of sustainable development in the next few decades, the question is not whether coal will play a role, but rather how the world and its rapidly growing population can continue to achieve the basic human rights to an improving standard of living, material wellbeing and adequate housing and services allowed by its use, while at the same time managing environmental impacts.

The Project should be assessed in the abovementioned context, namely that:

- the demand for coal will continue for the foreseeable future; and
- denying the right to develop the Project will not result in a decrease in GHG emissions. If the Project Mine is not developed, the coal which would have been exported will be supplied through another terminal in NSW, Queensland or elsewhere.

The EA was criticised, by submissions received by DoP during the EA exhibition period, for not including in its GHG emissions inventory the downstream GHG emissions from the burning of the coal which would be exported via the Project.

The review undertaken in this document indicates that:

- there is no legislative or policy requirement that such Scope 3 emissions should be included; and
- there are significant practical difficulties and anomalies in accounting for such emissions for a development such as the Project.

It is worth noting that the NCIG Project is a coal export terminal only. The Project does not produce nor consume coal and is considered a means of transportation for the coal (similar to rail/shipping transportation). In any event, an attempt has been made in this document to calculate the GHG emissions for the Project, and as well as the emissions which would be generated by the burning of the coal which would be exported via the Project when operating at its full capacity of 66Mtpa.

This document calculates that:

- the annual GHG emissions from the Project will be 69,760TCO_2e; and
- the annual GHG emissions from the burning of coal exported via the Project will be 161MTCO_2e.

ESD requires the effective integration of economic, social and environmental considerations in the decision-making process.

The various principles comprising the concept of ESD are set out in section 10 of this document.

One of the ESD principles is the precautionary principle. The application of the precautionary principle in an assessment process is triggered by the satisfaction of 2 conditions precedent: a threat of serious or irreversible environmental damage and scientific uncertainty as to the environmental damage.

Some submissions in response to the EA have contended that the precautionary principle is enlivened by the Project because of the GHG emissions that would be generated by the combustion of product coal.

The logic of this proposition can be questioned on 2 grounds. First, the Project does not involve or seek approval for the combustion of coal. Secondly, it is difficult to sustain an argument that these emissions constitute a threat of serious or irreversible environmental damage.

In the circumstances, the sensible conclusion would be that the Project, in terms of GHG emissions, does not constitute a threat of serious or irreversible environmental damage. If this conclusion is accepted, the precautionary principle would not be activated.

If contrary to the view expressed above, it is concluded that the precautionary principle is activated, it does not necessarily prohibit the approval of the Project. The precautionary principle is merely one of the principles of ESD. There is nothing in the formulation of the precautionary principle which requires a decision-maker to give the assumed factor (a serious or irreversible environmental damage) overriding weight compared to the other factors which are required to be considered, such as social and economic factors.

The Project is a development which will facilitate NSW coal mines to meet part of the increasing global demand for coal. It has been responsibly designed and reasonably mitigates its environmental impacts. The Project will provide social and economic benefits for the region, NSW and Australia. Having regard to all of the relevant objects of the EPA Act, it warrants approval.

SCHEDULE 1

Submissions raising detailed issues concerning GHG emissions and ESD include the following:

- Email from [name deleted] dated August 2006[77].
- Letter from the Colong Foundation for Wilderness Ltd dated 24 August 2006;
- Email from Gionni attaching submission dated 1 September 2006;
- Letter (handwritten) from [name deleted] dated 27 August 2006[78];
- Letter from Climate Action Newcastle dated 31 August 2006;
- Letter from Eco Network – Port Stephens Inc dated 30 August 2006;
- Letter from Total Environment Centre Inc dated 6 September 2006;
- Letter from Nambucca Valley Conservation Association Inc dated 4 September 2006;
- Letter from Clarence Environment Centre dated 6 September 2006;
- Letter from North Coast Environment Council Inc dated 11 September 2006;
- Letter from Maitland Greens dated 11 September 2006;
- Letter from Sutherland Shire Environment Centre Inc dated 13 September 2006;
- Letter from Greenpeace dated September 2006;
- Letter from Newcastle University Students Association Inc [undated];
- Letter from Rising Tide Newcastle dated 13 September 2006;
- Letter from Mudgee District Environment Group Inc dated 13 September 2006;
- Letter from Gayle Russell [undated];
- Letter from Hunter Community Environment Centre dated September 2006;
- Letter from New South Wales Greens dated 11 September 2006;
- Letter from Wilderness Society Newcastle Branch Inc dated 14 September 2006;
- Letter from National Union of Students dated 13 September 2006;
- Letter from Australian Student Environment Network dated 13 September 2006;
- Letter from The Rainbow Playgroup [undated];
- Letter from Johnsons Creek Conservation Committee [undated];
- Letter from Nature Conservation Council of New South Wales dated 13 September 2006;
- Letter from The Project Watch Association Inc dated 13 September 2006;
- Letter from Hornsby Conservation Society Inc dated 15 September 2006.

[77] Email sent to Scott Jeffries at Department of Planning is representative of a large number of other emails adopting the same template also received by the Department of Planning in which the names have also been deleted.

[78] This letter is representative of a large number of handwritten letters adopting the same template.

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