NSW EPA
ENVIRONMENT PROTECTION AUTHORITY

PCU033527

E-MAILED
9/5/12

Your reference: MP10-0215
Our reference: DOC12/9687; FIL10/383
Contact: Rebecca Scrivener; 4908 6830

Ms Rebecca Newman
Infrastructure Projects
Department of Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2001

09 MAY 2012

Dear Ms Newman

PORT WARATAH COAL SERVICES – TERMINAL 4 PROJECT (MP10_0215)
ADDITIONAL INFORMATION

Reference is made to your letter to the Environment Protection Authority (EPA) and Office of Environment and Heritage (OEH), dated 5 March 2012 providing copies of the Environmental Assessment titled '*T4 Project - Environmental Assessment*' (EA), dated February 2012, and request for the EPA/OEH to make a submission on the proposal including any recommended conditions of approval. The EPA understands the EA was on public exhibition from 8 March 2012 to 7 May 2012.

This letter provides comments on issues relating to the EPA's portfolio as well as issues associated with Aboriginal Cultural Heritage, Biodiversity, Estuary Processes and National Park estate which are within the OEH portfolio.

As you will already be aware EPA/OEH has provided adequacy comments on the draft EA for this proposal to the Department of Planning and Infrastructure (Planning) on 16 December 2011 which included detailed comments on additional information that would enable EPA to undertake a detailed review of the project and determine if it was able to provide recommended conditions of approval.

The EPA has reviewed the EA as exhibited and has identified issues with some sections of the EA. Further detailed information is needed in order for the EPA/OEH to fully assess the project and provide appropriate recommended conditions of approval. These issues are discussed further in **Attachment A**.

The main area of concern relate to biodiversity including threatened species impacts. The EPA and OEH will be unable to recommend conditions of approval until the information requested in Attachment A has been provided.

Please contact Rebecca Scrivener on 02 49086830 if you wish to discuss this matter.

Yours sincerely

MITCHELL BENNETT
Head Regional Operations Unit – Hunter
Environment Protection Authority

Department of Planning
Received
11 MAY 2012
Scanning Room

PO Box 488G Newcastle NSW 2300
117 Bull Street, Newcastle West NSW 2302
Tel: (02) 4908 6800 Fax: (02) 4908 6810
ABN 30 841 387 271
www.environment.nsw.gov.au

ATTACHMENT A

PORT WARATAH COAL SERVICES - TERMINAL 4 (MP10_0215)
GENERAL COMMENTS AND ADDITIONAL INFORMATION REQUIRED

GENERAL

The EPA has reviewed the Environmental Assessment (EA) giving consideration to the operation of the existing Kooragang Coal Terminal. The EPA understands that, should approval be granted for the project, the proponent will seek to vary the current Environment Protection Licence for the Kooragang Coal Terminal (EPL #1552) to include the area occupied, and construction activities associated with, the Terminal 4 project.

AIR QUALITY IMPACT ASSESSMENT

The EPA has reviewed the Air Quality Impact Assessment ("AQIA") giving consideration to the operation of Kooragang Coal Terminal.

The AQIA provided in Appendix M of the EA has been conducted generally in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* ("Approved Methods").

Pollutants assessed were particles, nitrogen oxides (NOx), sulphur dioxide (SO_2) and Volatile Organic Compounds (VOCs). Cumulative impacts were assessed against the OEH's impact assessment criteria and no exceedances are predicted.

The EPA notes emissions of most pollutants will increase when operations begin, following the initial construction phase. Similar annual TSP emissions are predicted for all project stages, with a slight peak during Stage 1 constructions due to fugitive emissions. Highest annual total PM_{10} emissions are predicted for Stage 3 when operations (dump stations, conveyors and transfers, stockpiles, yard machinery and ship loaders) will be at full capacity (120 Mtpa). This stage will also have the highest combustion-related emissions (NOx, SO_2).

The proponent has carried out a cumulative assessment of 24-hour PM_{10} particles in accordance with the Approved Methods and identified there will be exceedances of the National Environment Protection Council – Ambient Air Quality NEPM maximum concentration goal of 50µg/m^3 under 'worst-case' wind conditions due to the operation of the Terminal 4 project. The contribution from the Terminal 4 project is reported as ranging from 1 to 6µg/m^3 (Table 12.4 – Stage 3 Operations, Vol. 1). However, the Ambient Air Quality NEPM recognises that the concentration goal can be exceeded due to natural atmospheric conditions that would contribute to PM_{10} levels in the air shed such as bushfires and dust storms. It identifies an overall goal of 5 days per year where an exceedance of the 50µg/m^3 is acceptable. Currently there are between 1-2 days per year where the goal of 50µg/m^3 is exceeded (Table 12.5, Vol.1) at all assessment locations identified in the EA. The AQIA indicates that there will be no additional exceedance days due to the operation of the Terminal 4 project and therefore the operation of the project will meet the goals and objectives of the Ambient Air Quality NEPM.

Additional Information Required: The particle control measures for both the construction and operation phases of the project that are presented in Chapter 9 of the AQIA must also be implemented to ensure the contributions predicted in the EA are achieved. Given the community sensitivity to air quality, in particular dust emissions from industry in the Newcastle air shed, the EPA recommends the proponent identify additional mitigation measures that would be employed during weather conditions where the NEPM goal is likely to be exceeded, thus ensuring that any increased impact is minimised.

NOISE IMPACT ASSESSMENT

The Noise Impact Assessment (NIA) was carried out in accordance with the following EPA guidelines:

- Interim Construction Noise Guidelines (DECC 2009) ("ICNG")
- NSW Industrial Noise Policy (EPA, 2000) ("INP")
- Environmental Requirements for Rail Traffic-Generating Developments (www.environment.nsw.gov.au/noise/railnoise.htm , 2012)
- Environmental Criteria for Road Traffic Noise (EPA, 1999).

The NIA provided at Appendix L of the EA provides an impact assessment for a number of scenarios that consider both construction and operational phases of the project. The NIA has used the Environment Noise Model which is appropriate and has adopted the INP category of 'suburban' for Stockton and Fern Bay, consistent with the findings of the Commission of Inquiry held for the Newcastle Coal Infrastructure Group Third Coal Loader project. Cumulative and sleep disturbance assessments were also presented in the NIA.

The NIA has used data collected during previous studies in 2009 to establish noise assessment criteria for the Terminal 4 project with the noise assessment locations being in Fern Bay, Stockton, Carrington, Maryville, Mayfield, Warabrook and Sandgate in accordance with the INP.

The modelling results indicate that exceedances of intrusive noise criteria during construction of Stage 1 within the National Park estate to the north of the project site and also during construction of Stage 2. These predicted exceedances should be managed in accordance with construction noise management measures provided in the ICNG.

During the operation of the project, minor exceedances of intrusive noise criteria are predicted at Mayfield during the night time period under NW winds while exceedances of up to 4dB(A) are predicted at Fern Bay and Stockton. It is noted the project is not predicted to impact on sleep disturbance.

The cumulative impact assessment concludes there will be no appreciable incremental increase in cumulative noise levels under worst case meteorological conditions. The NIA states that the predicted increase is 1.6dB(A) at Sandgate while at all other assessment locations the increase is predicted to be less than 1dB(A).

The EPA notes the evening and night time amenity criteria for 'suburban' is already exceeded at Fern Bay and Stockton and it is predicted that future cumulative impacts will result in an additional 1-2dB(A) increase at these locations for evening and night time periods. The NIA indicates the exceedences identified are primarily related to noise generated from the existing Kooragang Coal Terminal.

No additional information is required with respect to noise emissions from the proposed coal loading facility.

On-site Rail Noise

The rail noise assessment presented in the NIA (Appendix L) has been generally carried out in accordance with the EPA guideline, '*Environmental Assessment Requirements for Rail Traffic-Generating Developments.*

Additional Information Required: This guideline recommends the geographical extent of the rail noise assessment should be defined as the point where project related rail noise increases are less than 0.5dB, which generally equates to where the project related rail traffic represents less than 10% of the total line/corridor rail traffic. In the EPA's adequacy review, it was highlighted that the rail noise assessment did not adequately identify the geographical extent of the rail noise assessment. It appears the exhibited NIA has not been updated to define the geographical extent. This information needs to be provided.

Off-site Rail Noise

The EPA notes the NIA has anticipated that the increase in rail noise will extend beyond the premises and along the rail corridor through the Hunter Valley Coal Rail Network and proposes a number of reasonable

and feasible mitigation measures that could be implemented to reduce rail noise associated with the Terminal 4 project. Table 49 of Appendix L lists these mitigation measures. However, the NIA and the Statement of Commitments do not appear reflect any intention to implement the proposed measures. The EPA acknowledges the proponent's responsibility for rail noise remains primarily within the boundary of the project footprint and that ARTC are responsible for managing rail noise from train movements within the overall rail network and has considered the rail noise assessment in light of these boundaries.

Additional Information Required: Given the significant increase in coal handling capacity at the Newcastle Port (up to ~330Mtpa should Terminal 4 project be granted approval), and the majority of coal delivery occurring via rail, the EPA recommends that a strategic noise assessment, management and reduction strategy be established to address the ongoing issue of rail noise along the Hunter Valley Coal Rail Network. This needs to consider the overall impacts of rail noise within the Hunter Valley in the context of both the number of increased rail movements to Newcastle as well the increasing number of coal mine projects and expansions within the Hunter Valley.

CONTAMINATION ASSESSMENT

The EPA has reviewed the EA including Appendix E, F and G in relation to contamination issues associated with the project site. In the review, the EPA has taken into consideration existing contaminated sites within the vicinity of the project site that have been notified to, and/or declared by the EPA via the provisions of the *Contaminated Land Management Act* 1997 ("CLM Act"). The proposed development footprint includes the following sites regulated by the EPA under the provisions of the CLM Act:

- ***OneSteel*** site and sediments (declaration 15008) - a 'transfer house' building is proposed to be constructed on the Benzene Impacted Area of the Onesteel Site. Two berths and shiploader is proposed to be developed in the declared Onesteel sediments with dredged sediment proposed to be reused for filling of the Terminal 4 project site. The management of the benzene and PAH contaminated groundwater in this area is regulated under a Voluntary Management Proposal (Agreement 19033) which requires further investigation of the groundwater contamination;

- ***BHP Kooragang Island landfill asbestos waste cell*** - conveyors and coal stockpiles are proposed to be located on the landfill containing asbestos wastes which is subject to a section 35 notice (Notice 357) under the *Environmentally Hazardous Chemicals Act* 1985. The notice states that remediation can only be undertaken with the approval in writing of the EPA;

- ***Delta EMD Kooragang Island site*** - conveyors and coal stockpiles are proposed to be located on the Delta EMD site which was notified to the EPA under s60 of the CLM Act but is yet been assessed as to whether the contamination is significant enough to warrant regulation under the CLM Act;

- ***BHP Supply Area*** (declaration 20122) - A proposed road extends through the BHP Supply area (refer area marked 'F' on Figure 7.3, Volume 1) which is declared as a remediation site and is regulated under the following Voluntary Management Proposals which have been agreed with the EPA and relevant landowners:

    - # 26085 and #26059 require capping of PAH and manganese impacted soil to reduce groundwater infiltration;
    - # 26059 requires capping of TPH and PAH contaminated soil; and,
    - # 20111712 requires the removal of free phase contaminants, construction of a barrier wall and capping of coal tar and PAH contaminated soil and groundwater (the capital works are due for completion by June 2013).

The contamination assessment presented in the EA is generally adequate and identifies likely impacts on existing contamination at Kooragang Island. A number of remedial measures are identified to mitigate the identified impacts, and these measures are proposed to be detailed in a Remedial Action Plan (RAP). Some of the measures are referred to in the Statement of Commitments.

Works Proposed for the Southern Side of the Hunter River South Arm - *Sediment Sampling and Analysis*

The Terminal 4 project includes the construction and operation of two berths, a transfer house and shiploader on the southern side of the Hunter River South Arm ('Area F'). The locations at which these facilities are proposed are currently the part of a Declared Investigation Area with the Declaration Notice being issued to OneSteel in 2001.

The EA indicates the proponent intends on reusing any dredged or excavated material from this area for pre-loading and site establishment purposes.

The EA does not provide adequate information regarding the quality of the sediments likely to be encountered during dredging operations. The sediment investigation results that are reported are limited to five sample locations to the east of the proposed dredge area and do not report concentration of polycyclic aromatic hydrocarbon, which is the primary contaminant of concern in the declared area.

Additional Information Required: Additional sampling of the sediments within the declared area adjacent to the Onesteel site is required to identify the nature and extent (including the depth) of sediment contamination and the suitability of the sediment for re-use as engineered fill. The number of samples should be sufficient to characterise the contamination with analysis of samples for the chemicals of potential concern associated with the historical use of the Onesteel site and surrounding land (including PAHs).

The sediment results should be analysed in relation to the following guidelines and trigger values:

- *Guidelines for Fresh and Marine Water Quality* (ANZECC/ARMCANZ, 2000) sediment trigger values to identify whether specific remedial action/management of contaminated sediments is required;
- DECCW's *Waste Classification Guidelines Part 1: Classifying Waste* (See http://www.environment.nsw.gov.au/waste/envguidlns/index.htm); and
- *Guidelines for the NSW Site Auditor Scheme* with respect to the 'commercial/industrial' criteria to assess the suitability of the material for reuse as engineered fill.

Contamination on Kooragang Island

1. Excavation Works

The EA proposes that all excavated materials will be managed in accordance with a Materials Management Plan (provided as a component of the Construction Environment Management Plan) and that materials which are not suitable for re-use will be placed in purpose built containment cell/s (Sec 7.3, Vol 1).

Additional Information Required: Given the existing contamination issues at Kooragang Island identified within the EA, the proponent will need to provide details of the proposed location and design of any containment cell/s.

2. Groundwater Impacts – Preloading and Site Establishment

The EA assesses the impacts associated with preloading and stress associated with establishing the coal stockyard on existing groundwater contamination on Kooragang Island. Excavation is proposed at 'existing high points' (mostly the central portion of the site and the BHPB Kooragang cell containing asbestos waste) to a depth of up to 3.5m and piled earth rafting will be undertaken to support machine berms (Sec 3.4, Volume 1). The flux of contamination in the groundwater is predicted to increase during both preloading and excavation work.

The EA identifies filling and preloading activities on Kooragang Island will result in settlement of the existing unsaturated fill in identified contaminated areas of the site (being waste cells 1, 2, 3 and 9), which is likely to result in the inundation of currently unsaturated materials beneath the groundwater-table. The predicted settlement in contaminated areas of Kooragang Island where settlement has been reported is estimated to be approximately 0.9 metres immediately after the construction work, increasing to 1.14 metres after 25 years.

The EA also predicts failure of the leachate collection system serving the existing Fines Disposal Facility (currently operated the proponent and subject to Environment Protection Licence #5022). Under the loading of the Terminal 4 project, it is anticipated that there will be rise in the watertable of 1.5 to 2.0 metres (Section 10.5, Appendix C) which will result in the lower 1.5 to 2.0m of existing dredge spoil coming into contact with the watertable (Sec 8.2.3, Vol 1).

The EA identifies a number of remedial options that can be implemented to mitigate identified impacts, including the increased flux of contamination as a result of the project and provides a framework for a Remedial Action Plan (RAP). The proponent commits to preparing a detailed RAP in the Statement of Commitments.

The Statement of Commitments (Chapter 19, Vol 1) identifies preferred remedial options (rather than committing to implementing the options) and identifies that detailed assessment, trial, design and pricing of contamination management of the following remedial options will be undertaken:

(i) Construction of a soil-bentonite barrier wall for Ponds 5 and 7 on Kooragang Island;
(ii) Installation of a permeable reactive barrier along the northern side of Area K7 (being the BHP Kooragang Island landfill asbestos waste cell);
(iii) Dual phase extraction for Site B (in the vicinity of Well B-10);
(iv) Installation of a low permeability cap over the existing surface at the Delta EMD site, prior to dredging commencing;
(v) Early capping after completion of dredge material emplacement (being 0.5m thick with permeability less than or equal to $1x10^{-7}$m/s) and;
(vi) Installation of a permeable reactive barrier is identified as the preferred remedial option for contaminated groundwater generated from the Fines Disposal Facility.

The EPA notes a sealing layer with the hydraulic performance equivalent to $1x10^{-8}$m/s and 0.5m thick is proposed for the Onesteel Site, KIWEF and Delta EMD site in Chapter 8 (Vol 1) of the EA, however is not referred to in the Statement of Commitments. The EA is also silent on remedial measures that may be implemented at waste cells 1, 2, 3, and 9 which are predicted to settle beneath the groundwater table.

Additional Information Required: The EPA requires additional details of the proposed contaminated groundwater control works and measures, prior to being able to determine whether they will be effective. These include:

- Details of remedial measures to be implemented to address the settlement of waste in Kooragang island cells waste cells 1, 2, 3 and 9 beneath the watertable/further beneath the watertable;
- Actions to ensure the long term maintenance of the permeable reactive barrier along the northern side of Area K7 should be identified and agreed by the landowner to ensure the landowner agrees to implement the long term maintenance requirements if required.

If the proponent supplies this additional information in the form of a RAP, the EPA recommends that a statutory site audit by a site auditor accredited under the CLM Act assesses the appropriateness of the plan of remediation in preventing the migration of contaminated groundwater from the site and provide a site audit statement prior to the commencement of the remedial work.

3. *Groundwater Impacts - Dredge Water Disposal*

It is proposed that sediments with suitable properties recovered from the dredging process will be used as engineered fill with an estimated 5.5 million cubic metres of dredged sand proposed for use as fill deposited on the site as a saline slurry (Section 3.4, Vol 1).

The EA identifies a series of sediment ponds being used to treat the excess water from the saline slurry, depositing the sand on the site with saline water being discharged back to the Hunter River. Measures to mitigate the infiltration of dredge water into Ponds 5 and 7 (being tar contaminated areas), together with lining of the water management ponds is proposed, however infiltration of saline water through the contaminated soil is anticipated to occur in other areas of the site. Modelling has been undertaken to estimate the effect of saline water on surrounding water bodies with some considerations of the effect of leachate generation.

The infiltration of dredge water into contaminated soil and fill at the site has been shown to have the potential for mobilisation of contaminants through leaching and increased groundwater flows. Migration of contaminants from off-site areas such as tar contamination beneath the Newcastle Coal Infrastructure Group's rail loop is also predicted (Sections 8.4 and 9.3, Vol 2).

Additional Information Required: The proponent needs to assess the potential impact on existing groundwater contamination if saline groundwater is reinjected or allowed to seep into the groundwater table. The EPA would only support wet sediment handling and deposition in areas of the site which have an impermeable barrier and appropriate drainage to prevent ingress of waters through contaminated soil (both on-site and off-site) and the associated generation of contaminated groundwater.

4. *Site Capping*

The EA identifies the history of the site being effectively an industrial landfill. The EA identifies three specific landfill areas being the central portion filled with industrial waste from former BHP Steelworks operations (known as 'KIWEF'), the Delta EMD site which contains waste from the Delta EMD operations in the central-eastern area of the project site and also the Fines Disposal Facility operated by the proponent which contains predominantly dredge and associated fines material.

The EA indicates that the construction of the stockyard will form the capping for the site, and that the Terminal 4 project is 'likely' to provide a sealing layer with hydraulic performance equivalent to a 0.5m capping layer with permeability less than 1×10^{-8} m/s in the Onsteel site, KIWEF and Delta EMD site 'and other areas' (Sec 7.3, Vol 1) and of less than 1×10^{-7} m/s in the remainder of the site (Sec 19.3, Vol 1).

Both the KIWEF and Delta EMD areas have EPA approved landfill capping strategies which are yet to be fully implemented while a final landfill capping strategy for the Fines Disposal Facility is yet to be developed.

Additional Information Required: The proponent will need to demonstrate that any final capping installed at the project site has a level of impermeability that is consistent with benchmark technique 28 specified in the document, '*Environmental Guidelines: Solid Waste Landfills'* (EPA, 1996).

SURFACE WATER ASSESSMENT

The Surface Water Assessment provided at Appendix J of the EA has been carried out using the guidelines, *Australian Guidelines for Fresh and Marine water Quality,* ANZECC 2000 ("ANZECC Guidelines"). The Surface Water Assessment generally demonstrates the project has been designed as a 'no water discharge' site with the exception of extreme wet weather events as required by the Director General Requirements.

Hunter River - South Bank/OneSteel Works

The EA provides little detail of the facilities to be constructed on the southern side of the Hunter River South Arm aside from identifying two berths, a transfer house and a conveyor system over the Hunter River will be installed. Detail on how these facilities will be constructed, what controls will be in place during construction, particularly the environmental controls to be employed while constructing a conveyor over the Hunter River and operational phase (including details of the construction and operational surface water management system) of the project have not been provided in the EA or Appendix J.

Additional Information Required: The EPA cannot provide comment on the acceptability or otherwise of this component of the project without further detail. For example, how construction of the conveyor over the river would be undertaken would need to be explained to demonstrate minimal impacts on the river before any decision could be taken as to acceptability.

Discharge of Surface Waters, Operations Phase - Kooragang Island

The EA (Chapter 9, Volume 1) indicates that during construction, dredge water will be captured on-site and discharged to the Hunter River via existing flow paths. An existing discharge line will be temporarily lined and modified to avoid the wetland area at the river's edge however, once the dredge material emplacement phase is completed, the lined drainage channel will be removed and existing downstream flow regime re-established.

Additional Information Required: By removing the lining of the drainage line following completion of the dredging works, scouring of the drain may occur. The water flow velocities in some of the modelled scenarios would appear to be very large and so significant erosion and scouring is highly likely if the drainage line is a "natural" drainage line. More detail on the construction of the final operational drainage line for the site is required.

Water Management

The design principles adopted for the water management for the site are appropriate.

The EA provides an overview of the water monitoring program to be developed at the site, including a list of contingency measures to be implemented at the site. The proponent indicates trigger values will be used for a suite of surface water quality parameters, however there is no detail of the triggers (other than those for TSS, pH and oil and grease) that would be adopted for the on-site monitoring during operations to determine if contingency measures need to be implemented. The EPA assumes the trigger values to be adopted would be consistent with the ANZECC guidelines for metals and nutrients.

Additional Information Required: If the proponent intends on using alternate trigger values, this detail needs to be provided and justified.

While the contingencies listed in the EA are standard and appropriate, they all require time for effective implementation (for example, increasing monitoring frequency and data validation). The proponent should identify some contingencies to be implemented for situations where a discharge is imminent. The proponent needs to propose a contingency if the water quality measurements indicate that the water is not acceptable for discharge and the ponds need discharging urgently.

During construction, the proponent proposes to monitor up and downstream of the discharge point in the Hunter River. The EPA recommends the proponent also monitor at the discharge point. The proposed monitoring frequencies for surface water bodies at the site and also discharge monitoring frequency are appropriate.

Water Treatment Processes

Chapter 9 (Volume 1) describes the water treatment process, via sedimentation ponds, to capture and treat surface water generated at the site. Modelling has been carried out to estimate the effectiveness of particle removal in the proposed water treatment system using the assumption that suspended particles have average size of 20µm.

Additional Information Required: The proponent should review the particle size assumption and ensure this is appropriate given the primary source of suspended sediment during the operational phase will be coal fines from the stockyard. If coal fines are generally smaller than 20µm on average it may mean the modeled estimate of 96% removal efficiency for the system may be an overestimate as smaller particles are harder to remove. Coal dust could be much smaller (as small as 1µm).

THREATENED SPECIES

OEH has reviewed the EA and associated ecological appendices provided in Appendix K (including the '*Ecological Assessment of Zannichellia palustris*' report) for the Terminal 4 project. The information provided and assessments presented have been generally carried out in accordance with the following OEH guidelines and State policies:

- *Draft Guidelines for Threatened Species Assessment, (DEC and DPI, 2005);*
- *Threatened Species Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft (DEC, 2004);*
- *Threatened Species Survey and Assessment Guidelines: Field Survey Methods for Fauna – Amphibians (DECC 2009a)*
- *Principles for use of Biodiversity Offsets in NSW (DECCW, 2008);*
- *Kooragang Island Compensatory Habitat Framework (DECC 2010);*
- *SEPP 14 – Coastal Wetlands*; and
- *SEPP 71 – Coastal Protection.*

Flora and Fauna Survey and Assessment Methodology

The survey effort and methodologies utilised for the baseline flora and fauna survey appear to be adequate and conducted in accordance with the guidelines, '*Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities – Working Draft*' (DEC 2004) and '*Threatened Species Survey and Assessment Guidelines: Field Survey Methods for Fauna – Amphibians*' (DECC 2009a).

OEH acknowledges that the exhibited EA has clarified sampling stratification units and has provided this information in a tabular format (Table 3.2, Appendix K) enabling an assessment of survey effort against each stratification units. However the table omits the size / area of each stratification unit. This information would have been helpful to enable OEH to further assess survey effort against scale.

However, it is acknowledged that Appendix K clearly indicates that extensive surveying has been undertaken at appropriate seasonal times to adequately determine likely subject species. OEH notes that a number of fauna survey methodologies have not been undertaken (e.g. pitfall and Elliott trapping), however, concedes that these generally represent techniques for faunal groups/guilds unlikely to be present due to lack of habitat (e.g. small mammals).

OEH previously requested that the proponent demonstrate that *Asperula asthenes* and *Maundia triglochinoides* are not present on the proposed development site, via appropriate means, such as appropriately timed targeted surveys in accordance with OEH guidelines (DEC 2004).

Additional Information: The current EA states that targeted surveys were undertaken for these species but omits specific details on timings with respect at what time of year they were undertaken. These details need to be provided so that OEH can ascertain whether or not appropriate surveys have been undertaken.

Appendix K implies that *Maundia triglochinoides* is unlikely to be present as it has not been recently recorded apart from a historical record from north of the Fullerton Cove area some 10 km from the project site. However, OEH notes it has been recently recorded (February 2012) from Tomago (Old Punt Road area), approximately 4-5 km from the project site. At this location it was growing in a freshwater wetland dominated by *Phragmites* and *Typha*, similar to the wetland habitats found on the project site. As such OEH believes this species should be incorporated into the threatened species assessment or adequate evidence provided to demonstrate that appropriately timed targeted surveys have been undertaken in all likely freshwater wetland habitats.

Compensatory Offset Package

The key issue of concern to OEH relates to the proposed compensatory offset package presented in the EA. The EPA/OEH provided lengthy advice to Planning in response to the adequacy review of the EA including the Ecology Assessment and proposed compensatory offset package. The advice provided below summarises OEH's main concerns identified during the assessment of the exhibited EA and defers to the detailed advice provided to Planning on 16 December 2011 as it relates to threatened species.

The EA acknowledges the significance of the project site with regards to threatened species habitat, including migratory bird habitat and identifies the significant level of impact on these habitats as a result of the Terminal 4 project. However, the compensatory habitat package presented requires more detail and depth to demonstrate how the proposed package adequately offsets the degree of impact identified if the project progresses to construction and operation phases.

Additional Information: A singular, over-arching 'compensatory offset package' for the entire proposal needs to be provided, that clearly demonstrates how each threatened species, ecological community and habitat which is impacted upon is actually offset. OEH acknowledges that the EA provides the framework of such a package but it is lacking the detailed information, finality (i.e. what the actual offsets for each impact are) and certainty for OEH to assess what measures are being implemented.

OEH formally invites the proponent to enter offset discussions so that an agreed offset package for the entire proposal, compensating all threatened species, EEC and habitats is achieved. OEH recommends to Planning that any offset package proposed is assessed and endorsed by OEH to ensure it adequately compensates all impacts, prior to a determination being made on the project.

Compensatory Assessment Methodologies

The compensatory offset package needs to clearly delineate what offset measures will be implemented for each threatened species and/or ecological community affected, including the location and scale of proposed land-based offsets and to a lesser extent the on-site mitigation measures. This should be done either through:

(i) extensive baseline surveys and assessments of existing species populations, habitat areas and communities situated within the project footprint, to enable comparisons with the propose offset site to determine suitability; and

(ii) based on baseline surveys and assessments, provide an indication of how they meet OEH offset principles[1] OR

(iii) the provision of a 'biobanking assessment' for the overall offset package which is done in accordance with the '*BioBanking Assessment Methodology (BBAM)*' (DECC 2008) as defined under Section 127B of the *Threatened Species Conservation Act 1995* ("TSC Act") and the '*BioBanking Assessment Methodology and Credit Calculator Operational Manual*' (DECC 2009b).

[1] *Principles for use of Biodiversity Offsets in NSW (DECCW, 2008)*

The compensatory offset package currently presented in Appendix K appears to utilise parts of both assessment approaches listed above which makes it difficult to assess the overall suitability of the proposed package as the approaches utilise different key assumptions as the basis of the approach.

The proponent needs to adopt one or other of the assessment methodologies and apply the approach consistently to the entire compensatory offset package, rather than to individual components and present the chosen methodology as part of the compensatory offset package.

Details on what type and degree of information should be presented if the OEH offset principles[2] approach is adopted were provided to Planning in our adequacy response on 16 December 2011.

Similarly OEH provided detailed advice on 16 December 2011 regarding the use of the biobanking assessment methodology, as well as advice regarding the use of the guideline document '*NSW OEH Interim Policy on Assessing and Offsetting Biodiversity Impacts of Part 3A – State Significant Development and State Significant Infrastructure Projects (OEH, 2012)* in demonstrating and/or justifying the proposed offsets are commensurate with the identified impacts of a development. If BBAM is utilised, the OEH requests the following information be included in the proposed offset package:

- All appropriate BioBanking assessment files (including all reports, associated maps, field sheets etc.), and any relevant expert reports (if applicable).
- All appropriate GIS shape files (e.g. maps, plots and transects, assessment circles, species polygons) and Credit Calculator export files (i.e. *xml files).
- Geo-referenced map(s) showing the locality of the offset lands, relevant vegetation zones and management areas (if applicable).

OEH's correspondence, dated 16 December 2011 provided a detailed checklist of our requirements.

Where the '*NSW OEH interim policy on assessing and offsetting biodiversity impacts of Part 3A, State significant development (SSD) and State significant infrastructure (SSI) projects*' is being used in conjunction with BBAM the proponent must stipulate which level(s) of offset is being offered. In accordance with the interim policy, justification must be provided as to why it is appropriate to apply the Tier 2 ('no net loss') or Tier 3 ('mitigated net loss') outcomes. Furthermore, in considering whether the mitigated net loss standard is appropriate, justification must be provided on:

(i) whether the credits required by the calculator are available on the market;
(ii) whether alternative offset sites (other than credits) are available on the market; and
(iii) the overall cost of the offsets and whether these costs are reasonable given the circumstances. This must be to satisfaction of and in consultation with OEH. Tier 2 and Tier 3 offset proposals will likely require a larger area of remnant vegetation to be offered in the offset package than if Tier 1 ('improve or maintain') has been met.

Land Ownership and Conservation Mechanisms

OEH acknowledges that the proponent has provided some information on the location of possible land based offsets, such as the Hunter Estuary Wetlands land-based offset site, the Crookwell site near Nowra and Ellalong Lagoon. Specific information regarding their biodiversity value and similarities to the development site needs to be provided. Similarly, OEH acknowledges that the EA implies the offsets will be managed and conserved in perpetuity, however specific details on which mechanism(s) will be utilised is not generally provided, except for indicating that Ellalong Lagoon would be transferred to OEH conservation estate (providing OEH / NPWS support).

OEH understands that the proponent is still in negotiations for some of the proposed offset sites outlined in Appendix K and this has limited the amount of information that can be presented in the EA. To enable OEH to assess the biodiversity values in comparison to the development site, a full assessment of the offset site

values compared with the identified impacts, is required, as per the OEH offset principles or BBAM process discussed above.

Additional Information Required: Ownership information will be required, if necessary as 'commercial–in–confidence', to facilitate a detailed assessment of the project impacts/mitigation measures and the offsets/mechanism to secure the offsets to be made. Preferably, this assessment will be completed prior to the project being determined by the Planning.

OEH acknowledges Appendix K indicates that Ellalong Lagoon would be transferred to OEH conservation estate (pending OEH / NPWS support). Further details need to be provided of the final conservation mechanism(s) which will be used to secure the remaining offset(s) in perpetuity, and how the offset sites will be managed. This should not just be restricted to land-based offsets, but include the on-site mitigation measures that aim to maintain *in situ* viable populations of threatened species (e.g. Green and Golden Bell Frog and *Zannichellia palustris)*. Options for securing offset lands in perpetuity were provided in our correspondence of 16 December 2011.

OEH requests that the preferred method(s) of conservation be finalised prior to the project being determined by Planning. Under the OEH offset principles[1], the proponent must indicate up-front the mechanism to be used to achieve conservation in perpetuity, appropriate management regimes (including other habitat enhancement or mitigation measures) and financial security with respect to ongoing management.

Threatened Species Issues for Consideration in the Compensatory Habitat Package

The threatened species assessment presented in Appendix K is generally adequate, however the following issues identified by OEH in the adequacy review associated with offsetting impacts on green and golden bell frogs and migratory shorebirds and waders are yet to be adequately addressed.

1. Green and Golden Bell Frog (GGBF)

The proponent needs to demonstrate consideration has been given to the feasibility of staging the Terminal 4 project so that areas of important and significant habitat are retained whilst GGBF habitat re-creation is ongoing (as outlined in Appendix K, Section 6.0 'Impact Mitigation Strategy') and breeding success in newly constructed ponds is shown to be successful, preferably over multiple seasons (i.e. two generations). This would ensure that some breeding habitat is retained as a safety measure if habitat re-creation works are unsuccessful, and as such would likely ensure the continuing viability of the local population.

OEH notes that Appendix K (Section 5.4.1.1) states that the project will not be staged and that it is likely that all known breeding habitat within the project footprint will be lost during Stage 1 of the development. However, this does not explain why the project can not be specifically staged, as outlined above, so that some of current GGBF habitat can be retained during the habitat re-creation phase.

OEH recommends further consideration of staging the development or adequate justification be provided as to why this can not occur.

2. Migratory Shorebirds and Waders

Appendix K considers the significance of 'Deep Pond' as foraging and roosting habitat for a variety of shorebirds and waders (including threatened species, such as the deep-diving Blue-billed and Freckled Ducks), and acknowledges it is considered the fifth most important wetland for such species in the Hunter Estuary. However the assessment does not provide adequate justification for the loss of significant avian habitat nor demonstrate that it can be adequately compensated via an offset mechanism.

OEH recommends that any 'land-based offset(s)' proposed in the final compensatory offset package must demonstrate the following:

(i) how the proposed offset is commensurate with the high habitat significance of the 'Deep Pond' site and

(ii) that it represents appropriate shorebird/wader habitats for all significant species impacted upon through loss/modification of Deep Pond.

Appendix K (Section 5.3.5 'Summary of Potential Ecological Impacts') states the proposal will likely result in the clearing of 283.8 ha of vegetation and habitat which includes 75 ha of native vegetation ranging from coastal saltmarsh, freshwater wetlands to mangrove forest. Two of the native vegetation communities represent endangered ecological communities, namely '*Coastal Saltmarsh*' and '*Freshwater Wetlands on coastal floodplains'* which also provide habitat to a number of threatened fauna and specifically to the threatened plant *Zannichellia palustris*.

The non-native communities (ranging from exotic grassland/forbland, tree plantings to open water) which will be impacted also contain components of significant habitat to threatened species. This includes breeding and foraging habitat for shorebird, waders and deep-diving ducks, and Green and Golden Bell Frog, particularly that associated with 'Deep Pond', which will be partially removed / impacted upon.

OEH acknowledges that in part, some of these communities have undergone historic anthropogenic disturbance, in the most part they still represent regionally significant habitat (and in some instances likely State significant) for a number of threatened species, particularly Green and Golden Bell Frog, *Zannichellia palustris*, and a variety of threatened bird species. OEH expects substantial appropriate offsets are provided that are commensurate with habitats being impacted upon by the proposal.

Within the study area, Appendix K identifies the following threatened species (as per the NSW TSC Act) which have been recorded on the T4 site include:

• **Flora**	*Zannichellia palustris*		
• **Amphibians:**	Green and Golden Bell Frog		
• **Birds:**	Australasian Bittern	Freckled Duck	Pied Oystercatcher
	Black-necked Stork	Glossy Black Cockatoo	Red-backed Button-quail
	Black-tailed Godwit	Great Knot	Spotted Harrier
	Blue-billed Duck	Magpie Goose	White-fronted Chat
	Curlew Sandpiper	Osprey	
• **Bats:**	Eastern Bent-wing Bat	Grey-headed Flying-fox	Yellow-bellied Sheathtail-bat
	Eastern Free-tail Bat	Large-footed Myotis	
	Greater Broad-nosed Bat	Little Bent-wing Bat	

OEH is of the opinion that the overall offset package should ultimately aim to cater for all these species and ecological communities, but given the importance of the development site to the Green and Golden Bell Frog, the *Zannichellia palustris*, and a variety of shorebirds (including breeding habitat), any land-based offsets should substantially offset these significant fauna.

Section 7.2.5 of Appendix K outlines a range of offset and mitigation options set against specific impacted species, ecological communities and habitat, including

(i) on-site mitigation works to maintain viable populations (e.g. GGBF and *Zannichellia palustris*),

(ii) direct land-based offsets representing appropriate habitat and containing known populations of affected species (e.g. GGBG, migratory shorebirds / waders and EEC),

(iii) habitat restoration / re-creation (e.g. GGBF and *Zannichellia palustris*), and

(iv) funding management and/or research.

Further details on these measures are presented throughout Section 7 of Appendix K, however, in many instances, these are presented as options without any finality and/or specific details on locality, which specific species they offset and how they are commensurate. This level of detail is required to enable OEH to complete an assessment of the offset options

Research

OEH notes that some of the mitigation / offset measures include research components. OEH acknowledges this is a key component to the Kooragang Island Offsetting Framework, however understands the proponent is not adopting this framework for the provision of offset options. OEH supports and recognises the value of scientific research in conserving a species, and in this circumstance considers these measures to be value adding to the overall package.

Management Plan

As advised on 16 December 2011 OEH requires that an appropriate Management Plan (such as vegetation or habitat) be developed and implemented in perpetuity as a key measure to any offset / mitigation package. This should be done prior to any approvals. Provisions of a management plan will facilitate the assessment of the EA and whether or not it adequately addresses impacts on threatened species, their habitat and EEC. The plan should be underpinned by an appropriate monitoring program and adaptive management regime to ensure ongoing success.

Further details on what should be included in a management plan were provided on 16 December 2011 and OEH refers Planning to this advice.

References:

DEC (2004) *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities*. Draft, Department of Environment and Conservation, Hurstville; available at: http://www3.environment.nsw.gov.au/pdfs/tbsa_guidelines_draft.pdf.

DECC (2008) *BioBanking Assessment Methodology*. Department of Environment and Climate Change NSW.

DECC (2009a) *Threatened Species Survey and Assessment Guidelines: Field Survey Methods for Fauna – Amphibians*. April 2009. Department of Environment and Climate Change (NSW), Goulburn Street, Sydney.

DECC (2009b) *BioBanking Assessment Methodology and Credit Calculator Operational Manual*. Department of Environment and Climate Change NSW, Sydney; available at: http://www.environment.nsw.gov.au/resources/biobanking/09181bioopsman.pdf.

OEH (2011) NSW OEH interim policy on assessing and offsetting biodiversity impacts of Part 3A, State significant development (SSD) and State significant infrastructure (SSI) projects. NSW Office of Environment and Heritage, Sydney, June 2011.

NATIONAL PARK ESTATE

OEH (National Parks and Wildlife Service) has reviewed the EA with respect to the impacts and interactions of the Terminal 4 Project on the Hunter Wetlands National Park ("HWNP") which adjoins the proposed project site to the north and west. The assessment has included consideration of the affect of the project on the ecological function of the adjoining reserve, and the proposed offset site which adjoins the HWNP near Tomago, referred to in the EA as the '*Hunter Estuary Wetlands Offset Site*'.

Existing Infrastructure and Services

The land identified within the area of the State Environmental Planning Policy (Major Projects) 2005 ("SEPP"), adjacent to the existing rail corridor, contains a range of existing utilities such as water, oil and gas pipelines. The EA implies these utilities and services will need to be moved to allow for infrastructure required for the Terminal 4 project, potentially beyond the boundary of the SEPP land to be within HWNP.

While it is permissible in certain circumstances for this type of infrastructure to be located within reserved land, it is generally only where there are no other feasible or reasonable options available.

OEH strongly recommends infrastructure, utilities and associated services remain within the SEPP land to ensure there are no additional impacts on reserved land. Any realignment works need to be restricted to the SEPP areas and no works are to be conducted within the National Parks and Wildlife Services Reserve system.

The EA discusses the realignment of the Sydney-Newcastle Oil and Gas Pipeline and a proposed easement. Figure 1.2 (Appendix K) indicates the pipeline will run through the middle of OEH Wetland 2. The relocation of this pipeline may affect the ecological integrity of OEH wetland which has scant discussion in Section 9.2.6, Appendix J. The existing Oil and Gas Pipeline runs through the middle of Railway Road Pond and should not be removed from its current location and remain in situ as OEH Wetland 2 is a significant wetland for the Green and Golden Bell Frog.

Realignment of Watercourses

The EA indicates the proponent intends to realign the existing watercourse off Mosquito Creek (Mosquito Creek Tributary, Appendix J, Section 8.2.2, and Figure 6).. Appendix J currently states, *" A detailed investigation into the most appropriate construction and re-vegetation techniques will be conducted",* indicating a thorough environmental assessment has yet to be conducted on the creek realignment proposal. The proponent needs to provide adequate environmental assessment of the proposal prior to determination of the project

Compensatory Offset Package

More detail needs to be provided regarding offsetting for the loss of saltmarsh and mangrove habitat provided by the Hunter Estuary Wetlands Offset Site (Appendix K, Section 7.4.1.) Major works are proposed by the proponent for this offset site to create saltmarsh and foraging habitat for shorebirds. The works proposed will also require long-term management and maintenance such as management of the sluice gates, removal and management of the aquatic weed, *Juncus acutus*, mangrove seedling removal and a commitment for long-term management needs to be made by the proponent.

Although the area in question has not been formally identified in the report, National Parks and Wildlife Service understands the area adjoins National Parks and Wildlife Service estate where a major rehabilitation project is being undertaken. Any offset works need to be complementary to this major initiative and needs to be demonstrated in the Compensatory Offset Package.

There is an assumption in the EA that approval will be given for the proposed works at the Hunter Estuary Wetlands Offset Site. OEH advises that the proposed works will be considered in light of the entire compensatory offset package and, in the case of the Hunter Estuary Wetlands Site, how the proposed works may compliment existing ecological rehabilitation works occurring within the HWNP.

Loss of Migratory shorebird habitat in Swan Pond

Swan pond is considered one of the most important wetlands for shorebirds within the Hunter Wetlands National Park and the loss of approximately 2.3 hectares of salt marsh habitat from this wetland will substantially contribute to the incremental loss of migratory shorebird habitat in the estuary. This area has been actively managed, by both the Hunter Central Rivers Catchment Management Authority and the Hunter Bird Observers Club, to improve and maintain shorebird habitat over many years and the mudflats associated with Swan Pond are important feeding habitat. . The proponent needs to review the proposal to ensure impacts on the Swan pond are eliminated or at least are minimised.

Dredging and Changes in Tidal Prism

Although development consent for dredging of the Hunter River (see Section 1.1.1, Appendix K) has been granted approval and the dredging operation will be carried out under the existing consent, it is important to note that variations to the approval are being sought, and that approval has not yet been given by the Commonwealth under the *Environment Protection and Biodiversity Conservation Act* 1999 on Matters of National Environmental Significance. Changes in the tidal prism may affect the ecological function of the wetlands within the Hunter Wetlands National Park, as the major tributaries that feed the wetlands on the western side of the park; Fish Fry Creek, Wader Creek, Dead Mangrove Creek, Cobbins Creek and Crabhole Creek all occur within 6km of the dredging location.

ABORIGINAL CULTURAL HERITAGE

The OEH has reviewed the EA, including Appendix Q titled '*T4 Project Heritage Assessment - Final*' (dated 17 February 2012). The Aboriginal Cultural Heritage assessment has been generally carried out in accordance with OEH's Aboriginal cultural heritage assessment guidelines and the requirements of Part 6 of the *National Parks and Wildlife Act 1974* (NPW Act).

Aboriginal consultation

OEH encourages the proponent to continue to engage with the registered Aboriginal parties in maintaining appropriate cultural heritage outcomes for the proposed development. As a general rule, gaps in the consultation process of 6 months or more will not constitute a continuous consultation process. Where a proponent envisages a gap of more than 6 months it is recommended that registered Aboriginal parties are regularly informed of progress.

Management of Aboriginal cultural heritage

OEH acknowledges the additions to the Heritage Statement of Commitments provided in Section 19.11 of the EA, which address the possibility that currently undetected cultural heritage, may be present within the project area in those areas where Aboriginal objects have not been previously identified.

----------END----------

EPA 9 MAY 2012