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Your reference: 13/13095
Our reference: DOC13/71535; FIL12/7246
Contact: Steve Lewer, 4908 6814

Ms Lisa Mitchell
Manager, Infrastructure Projects
Department of Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2001

Attention: Rebecca Sommer

Dear Ms Mitchell

RE: REVIEW OF PREFERRED PROJECT REPORT AND RESPONSE TO SUBMISSIONS FOR PORT WARATAH COAL SERVICES TERMINAL 4, KOORAGANG (NEWCASTLE) (MP 10_0215)

I refer to your letter dated 8 October 2013 requesting comments on the Port Waratah Coal Services (PWCS) Response to Submissions and Preferred Project Report ('the report'). The Office of Environment and Heritage (OEH) understands that the report was on public exhibition from 16 September to 22 November 2013.

OEH has undertaken a review of the report titled 'T4 Project – Response to Submissions and Preferred Project Report' (including its appendices) (dated September 2013) and has provided detailed comments in **Attachment A.** OEH acknowledges that the project will have a significant impact on the followings matters of State importance: (i) the likely loss of Green and Golden Bell Frogs (including decline in population numbers), (ii) the removal of known habitat for the Green and Golden Bell Frog, *Zannichellia palustris* and a variety of threatened migratory wader birds, (iii) the clearing of two endangered ecological communities: 'Freshwater Wetlands on coastal floodplains' and 'Coastal Saltmarsh', and (iv) the cumulative impact and loss of wetland habitat that has connective value to Ramsar and State Significant Wetlands. However, OEH notes that the assessment of the development proposal and the proposed biodiversity offsets were undertaken predominantly in accordance with the 'BioBanking Assessment Methodology (BBAM)' (DECC 2008) as defined under Section 127B of the *Threatened Species Conservation Act 1995*, the 'BioBanking Assessment Methodology and Credit Calculator Operational Manual' (OEH 2011a), and the 'NSW OEH interim policy on assessing and offsetting biodiversity impacts of Part 3A, State significant development (SSD) and State significant infrastructure (SSI) projects' (OEH 2011b). The latter policy allows for modification to the BBAM under limited circumstances. As such, OEH is of the opinion that the proposed biodiversity offset strategy (as outlined in Appendices J and K) represents commensurate vegetation, species and habitat, if not better than those found on the development area given their disturbed nature, in part.

OEH acknowledges that with respect to Aboriginal cultural heritage and biodiversity (including threatened species matters), the Response to Submissions and Preferred Project Report generally addresses OEH's interests and concerns. Some minor issues are detailed below include:

- further justification on underlying assumptions used in the BBAM and/or re-running of the BBAM credit calculator over both the development proposal and biodiversity offset areas (as described in detail below)

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- further clarification of what credit variation criteria have been used under Tier 3 proposal (as per OEH interim policy) for offsetting on Major Projects and how the 'Biodiversity Offset Strategy' achieves this
- justification be provided as to why it is appropriate to apply the 'Tier 3' outcomes under OEH interim policy for offsetting on Major Projects
- additional minor justification relating to threatened species assessment, namely with respect to migratory shorebirds and waders
- clarification of conservation and management in perpetuity of the proposed biodiversity offset areas
- various matters that relate to National Park estate.

In summary, OEH still has minor concerns with some sections of the Response to Submissions and Preferred Project Report with respect to biodiversity that should be resolved prior to approval. These issues are discussed further in Attachment A. OEH has provided some advice with respect to recommended conditions of approval for some of these matters and will provide further advice once the above issues have been resolved. At this stage OEH has not formally reviewed the submission and preferred project report with respect to flooding and floodplain issues (including Appendix M – 'Assessment of modified design – flooding' and impacts associated with the restoration of the Tomago Offset Site) due to lack of resourcing. If you seek comment on this matter I suggest you directly contact the OEH's Senior Team Leader (Water Floodplains and Coast) at Newcastle on 4904 2594.

If you require any further information regarding this matter please contact Steve Lewer, Regional Biodiversity Conservation Officer, on 4908 6814.

Yours sincerely

25 NOV 2013

RICHARD BATH
Senior Team Leader - Planning
Regional Operations

Enclosure: Attachment A

ATTACHMENT A: OEH REVIEW OF PREFERRED PROJECT REPORT AND RESPONSE TO SUBMISSIONS FOR PORT WARATAH COAL SERVICES TERMINAL 4, KOORAGANG (NEWCASTLE)

THREATENED SPECIES

OEH has undertaken a review of the report titled 'T4 Project – Response to Submissions and Preferred Project Report' (including its appendices) (dated September 2013), but specifically focussed on:

- Appendix B – Umwelt's response to ecology matters (dated Umwelt August 2013)
- Appendix J – Updated impact mitigation and biodiversity offset strategy (dated Umwelt August 2013)
- Appendix K – Tomago offset site EIA (dated Umwelt August 2013)
- Appendix T – Frog habitat alternate design report.

Although in general, OEH is of the opinion that the biodiversity, mitigation measures and compensatory habitat (offsets) issues that were raised in our correspondence dated 9 May 2012 (under EPA letterhead) have generally been adequately addressed, the following matters need attention before OEH can properly assess the proposal:

- further justification on underlying assumptions used in the BBAM and/or re-running of the BBAM credit calculator over both the development proposal and biodiversity offset areas (as described in detail below)
- further clarification of what credit variation criteria have been used under Tier 3 proposal (as per OEH interim policy) for offsetting on Major Projects and how the 'Biodiversity Offset Strategy' achieves this
- justification be provided as to why it is appropriate to apply the 'Tier 3' outcomes under OEH interim policy for offsetting on Major Projects
- additional minor justification relating to threatened species assessment, namely migratory shorebirds and waders.

Baseline flora and fauna surveys

As stated in previous correspondence dated 9 May 2012, OEH was of the opinion that the majority of the flora and fauna survey components of the Environmental Assessment (EA) appeared to be adequate, however, further clarification was requested on survey effort for flora, specifically the provision of size of each stratification unit used for sampling, method of sampling and how they meet the minimum requirements in OEH survey guidelines (DEC 2004).

With respect to adequacy of the flora surveys undertaken, Table 2.1 in Appendix B indicates the survey effort. OEH has reviewed this report and is of the opinion that the survey effort undertaken is consistent with OEH guidelines and concurs that it generally exceeds the suggested minimum standard outlined in DEC (2004). Umwelt have provided appropriate justification where there has been a deviation in the number of sampling plots required, namely via the utilisation of a variety of techniques (transects and quadrats) and indicated that additional survey work was undertaken since the original review for the EA.

Furthermore, the proponent has utilised the BBAM to assess both the development site and the proposed Biodiversity Offset Areas. This assessment requires a minimum number of plots and/or transects to be undertaken to meet the methodology requirements. OEH confirms that the plots surveyed adequately represent OEH's survey requirements under the BBAM and are appropriately located within different vegetation types (including differing vegetation condition classes) on both the development site and proposed biodiversity offset areas (as detailed in Appendix J: Table 4.1 – Tomago, Table 4.6 – Brundee Swamp, and Table 4.11 - Ellalong Lagoon). Floristic surveying has been conducted during a variety of seasons (i.e. different months; September 2011 / July 2012 – Tomago, April & July 2012 – Brundee Swamp, and November 2011 / July 2012 – Ellalong Lagoon), and as such would have been undertaken at appropriate times suitable for determining the vegetation types present on the site.

As such, OEH is of the opinion that the flora and fauna survey components of the EA are adequate, meet OEH's survey guidelines, and have provided further clarification of how the stratification units were determined with respect to survey design.

Targeted surveys – flora

Previously OEH were unsure whether or not adequate targeted surveys were undertaken for two potential flora species (*Asperula asthenes* and *Maundia triglochinoides*) on site given that the EA did not provide any specific details on timing of such surveys. OEH specifically requested that the proponent provide details on the timing of these surveys with respect to their locality (i.e. stratification unit).

Maundia triglochinoides flowers and fruits are required for positive identification; these occur between November and January (during warmer months). It is easily confused with the more common genus *Triglochin* due to similarities in fruit morphology, which it can grow sympatrically with and in similar wetland habitats. As such it is pivotal to sample at the appropriate time for this species when fruits are available. Appendix B indicates that appropriately timed surveys were generally undertaken in most habitat types and that the species was not located. However, OEH notes that the two Freshwater Wetlands (i.e. Railway Road Pond and the pond at the eastern end of the railway corridor) were not sampled during the flowering / fruiting season, though Umwelt state that the ponds in the development area are typically brackish and as such do not provide ideal habitat for this species. OEH concurs that the species prefers fresh water (to 60 centimetres deep) and its presence on the development site is unlikely. Ideally all potential wetlands should have been surveyed during optimal times, however, given the lack of preferred habitat and no previous records, OEH concurs with the 'assessment of significance' undertaken (Appendix 1 of Appendix B) for the species that a significant impact is unlikely.

Similarly, *Asperula asthenes* may utilise wetland habitats (damp areas), though prefers riparian lands. Although this species has not been recorded in the general locale, this species is considered cryptic and information on its geographic range is poorly known. As such, OEH was of the opinion that potential habitat existed on site to warrant targeted surveying. Table 2.3 in Appendix B outlines the sites surveyed and their timing, indicating that these surveys were predominantly sampled appropriately (i.e. spring when the species fruits). Although some of the targeted surveys appear to have been conducted out of season, OEH notes that these generally covered sites that were considered saline and unlikely to support the species.

In light of the above comments, OEH considers that the targeted surveys for flora are adequate and have been done in accordance with OEH guidelines (DEC 2004). OEH notes that neither of the two species referred to above were detected on the development site.

Threatened species assessment

OEH acknowledges that the project will have a significant impact on the biodiversity and ecology of the Lower Hunter Estuary wetland complex, leading to the further loss of listed ecological communities and important habitat for a variety of threatened species, including migratory shorebirds. Similarly the EA also acknowledged the significance of the project site with regards to threatened species habitat, including migratory bird habitat; identifying that the Terminal 4 (T4) project would have a significant level of impact on these habitats which could not be avoided, and as a result would require a substantial biodiversity offset to compensate their loss. Specifically the T4 project will involve the loss of 18.9 hectares (ha) of Coastal Saltmarsh endangered ecological community (EEC), 27 ha Freshwater wetland on coastal floodplains EEC, 28.3 ha of Mangrove forest, and a further 175 ha (modified project area as per Table 6.2 in Appendix A – Summary of Submissions) of disturbed land including exotic grassland. The removal of these vegetation communities will result in the loss of known habitat for the following threatened species (as per the NSW *Threatened Species Conservation Act 1995* [TSC Act]) which have been recorded on the T4 site (as detailed in Section 4 of the original EA): *Zannichellia palustris*, Green and Golden Bell Frog, Australasian Bittern, Black-necked Stork, Black-tailed Godwit, Blue-billed Duck, Curlew Sandpiper, Freckled Duck, Glossy Black Cockatoo, Great Knot, Magpie Goose, Osprey, Pied Oystercatcher, Red-backed Button-quail,

Spotted Harrier, White-fronted Chat, Eastern Bent-wing Bat, Eastern Free-tail Bat, Greater Broad-nosed Bat, Grey-headed Flying-fox, Large-footed Myotis, Little Bent-wing Bat and Yellow-bellied Sheathtail-bat.

Given that the EA indicated that the proposal could not avoid or mitigate against the impacts to the above listed threatened species, their habitats and EEC, OEH requested that a singular, over-arching 'compensatory offset package' for the entire proposal needed to be designed, which clearly demonstrated how each threatened species, ecological community and habitat which is impacted upon is actually offset. Section 1.3 of Appendix J (Updated Impact Mitigation and Biodiversity Offset Strategy) outlines the proposed 'biodiversity offset strategy' which includes:

- the establishment, long-term management and conservation in perpetuity of three land-based offset sites: (i) Tomago Offset Site – 238 ha that conserves estuarine and freshwater habitat (including Freshwater Wetland EEC) for the Australasian Bittern and other wetland species, as well as the restoration of migratory shorebird habitat and Coastal Saltmarsh EEC; (ii) Brundee Offset Site – 204 ha adjacent to an existing National Parks and Wildlife Service (NPWS) conservation estate that conserves an existing large Green and Golden Bell Frog population (comparable to that of Kooragang Island), known Australasian Bittern habitat and Freshwater Wetland EEC; and (iii) Ellalong Lagoon Offset Site – 409 ha that conserves Freshwater Wetland EEC, is considered a drought refuge to a variety of water birds (including threatened species), with the additional conservation of known habitat for a variety of threatened forest birds and micro-bats
- the retention and creation of habitat on the T4 project site that maintains connective habitat between the development site and the adjacent private lands
- funding of the Green and Golden Bell Frog captive breeding program undertaken by the University of Newcastle (in association with the Newcastle Coal and Infrastructure Group)
- the translocation of *Zannichellia palustris* to similar aquatic habitats within the T4 project area
- the development of a long-term ecological management and monitoring program to assess and measure the success of the over-arching 'biodiversity offset strategy'.

To determine the adequacy of the proposed 'biodiversity offset strategy' (notably the land-based offsets) the proponent has utilised the BBAM as defined under Section 127B of the TSC Act. This assessment has been undertaken in accordance with 'BioBanking Assessment Methodology and Credit Calculator Operational Manual' (OEH 2011a), and the 'NSW OEH interim policy on assessing and offsetting biodiversity impacts of Part 3A, State significant development (SSD) and State significant infrastructure (SSI) projects' (OEH 2011b); the latter allows for modification to the BBAM under limited circumstances. OEH supports this approach as this is consistent with how threatened species impacts can be formally assessed under other parts of the *Environmental Planning and Assessment Act 1979*. Furthermore, OEH notes that Section 7.1.1 of Appendix J provides justification of the Biodiversity Offset Strategy against the OEH 'Principles for Biodiversity Offsetting'. OEH has reviewed this section and is of the opinion it provides appropriate validation of the strategy.

OEH has completed a review of the Appendix J (Updated Impact Mitigation and Biodiversity Offset Strategy) which includes the BBAM assessment of the development and proposed offsets sites, and generally concurs with the conclusions and outcomes of the assessment utilising the BBAM and the application of the OEH interim policy. As a result of this assessment the proponent is offering essentially a 'like for like' biodiversity conservation offset based on the provision of similar (i.e. vegetation types and species) and appropriate numbers of 'ecosystem' and 'species' credits. In general, OEH is of the opinion that proposed biodiversity offset areas (i.e. Ellalong Lagoon, Brundee, Tomago and T4 project site [habitat corridors]) will likely provide commensurate compensatory habitat to that occurring on the proposal.

OEH notes that the development footprint will result in the clearing of 74 ha of native vegetation / habitat (predominantly EEC), with an additional 175 ha of disturbed land including exotic grassland and 3.2 ha of planted areas. The latter two types are not considered habitat for threatened species and were not included in the BBAM.

OEH understands that a BBAM has been undertaken which indicates development would require the retirement of 1584 'ecosystem' credits and 8135 'species' credits. Table 7.1 in Appendix 1 of Appendix J

provides a breakdown of the types of ecosystem and species credits required from the development sites, as well as those generated from the biodiversity offset sites. This table indicates that the proposed biodiversity offset sites generally provide or exceed the ecosystem and species credit requirement from the development site. Further details on this process are discussed below.

To assess whether or not the BBAM has been applied correctly OEH required the proponent to submit the relevant credit calculator files and documentation as outlined in previous correspondence. OEH confirms that the proponent has submitted the relevant calculator files via the OEH BioBanking portal.

Use of BioBanking Methodology for Development Site (T4 Project) (Proposal ID: 0020/2012/0019D)

Appendix 1 of Appendix J indicates that the BBAM has been used to assess the development footprint to determine the quantum and type of offsets required to compensate for the loss of native vegetation (including EEC and threatened species) on the proposed development site. Section 3.1.2.1 of Appendix J states that the T4 Project Biodiversity Offset Strategy has been undertaken in accordance with Tier 3 of the OEH Policy. OEH concurs that the policy can be applied and that it appears to have been appropriately applied, however, the following details appear to have been omitted:

- What credit variation criteria have been used under Tier 3 and how the 'Biodiversity Offset Strategy' achieves this. OEH requires this justification to assess whether the application of the credit variation rules are in accordance with the policy and the BBAM.
- In accordance with the OEH interim offsetting guideline, justification should be provided as to why it is appropriate to apply the 'Tier 3' outcomes. In considering whether the mitigated net loss standard is appropriate, consideration should be given to: (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'. OEH concurs that the proponents and their consultants have discussed this during the consultation phase, but it must be included in the report.

Section 2.0 of Appendix 1 provides details on how the BBAM was applied (including underlying assumptions used) to the development site. Table 7.1 indicates that the development site requires the retirement of 1584 'ecosystem' credits based on the breakdown of biometric vegetation types (BVT) that will be impacted upon: (i) 755 credits of HU563 – Mangrove forest in estuaries of the Sydney Basin and South East corner, (ii) 364 credits of HU606 – Saltmarsh in estuaries of the Sydney Basin and South East Corner, and (iii) 465 credits of HU673 – *Phragmites australis* and *Typha orientalis* Coastal Freshwater Wetlands of the Sydney Basin. The latter two BVT's represent EEC (when in 'moderate/ good condition') which typically 'red flags' the proposal under BBAM, however, this scenario does not apply to State Significant Projects. Similarly Table 7.2 details the 'species' credits that are required for the development site which total 8135, and include significant numbers of credits for Green and Golden Bell Frog, Red-backed Button-quail, Black Bittern, Southern Myotis, Terek Sandpiper, Great Knot, Australasian Bittern and Black-necked Stork.

Section 7.2 in Appendix 1 of Appendix J provides an assessment of credits created on the biodiversity offset site against the credits required. With respect to the 'ecosystem' credits two of the three BVT recorded on the development site will have their credit quantum matched by the biodiversity offset sites. The Coastal Saltmarsh BVT (HU606) requires 364 credits to be retired and the Tomago Offset Site will generate 1741 credits which greatly exceeds the requirement. OEH concurs with Appendix 1 that the Tomago Offsite Site is within the Karuah Manning CMA sub-region which matches the BBAM credit profile for the development site, bit it would not achieve a Tier 1 (like-for-like) outcome under OEH's interim policy die to 'red flag' matters (in this cases EEC) not being avoided on the development site. The Freshwater Wetland BVT (HU673) requires 465 credits to be retired and similarly this is met (with a surplus) with the T4 On-site offset, Ellalong Lagoon and the Tomago sites all contributing to the required credits. However, only half the credits generated by these offsets sites meet the credit profile requirement from the development site (i.e. occurring within the specified CMA sub-region). Although the Tomago Offset Site is not located in the appropriate CMA sub-region, OEH agrees that it is appropriately located in the Lower Hunter Estuary and that it will generate similar habitat / vegetation to that being lost. Under the OEH interim policy

justification for the Tomago site could be argued on the basis that the BVT being conserved is within the same vegetation formation within the same IBRA region (i.e. credit variation criteria (g) under Tier 3). OEH notes that a further 1352 credits (1451 total surplus) of this BVT is generated by the Brundee Offset Site within the same vegetation formation and IBRA region (Sydney Basin). As such OEH is of the opinion that the biodiversity offset sites provide commensurate offsets for these two BVT's and generally exceed the 'ecosystem' credits required for adequate compensation.

With respect to the remaining BVT, Mangrove forest in estuaries (HU563), the biodiversity offsets sites do not achieve the credit requirement required from the development site BBAM. Only the Tomago Offset Site generates 'ecosystem' credits for this BVT, providing approximately half (i.e. 377 credits). However, Appendix 1 indicates that credit retirement could occur across the same vegetation formation providing it is within the same IBRA region (i.e. credit variation criteria (g) under Tier 3). OEH acknowledges this is correct and consistent with a Tier 3 outcome under the OEH interim policy.

Species credits for the development site are detailed in Table 7.2 of Appendix 1 of Appendix J, which indicates a total 8135 credits are required to compensate the proposal. The four proposed biodiversity offset areas under strategy generate 19,978 'species' credits across all four of the biodiversity offset sites, with a residual of 11,843 credits. Section 7.2 of Appendix 1 of Appendix J indicates that's of the 13 threatened species that require 'species' credits, the requirements for 10 of these species are either met or greatly exceeded by the proposed 'biodiversity offset strategy'. Furthermore, this matching of the 'species' credits generated from the biodiversity offset sites against those required from the development site have generally been done in accordance with the gazetted version of BBAM (i.e. as legislated under the TSC Act). For example, with iconic species, such as the Green and Golden Bell Frog and the Australasian Bittern the credits generated on the Brundee, Ellalong Lagoon and Tomago offset sites meet the credit profile requirements of the development site, in that they are all located within the Sydney Basin IBRA region. OEH notes the biodiversity offsets doe not achieve the appropriate number of 'species' credits for three (3) of the 13 threatened species (*Zannichellia palustris*, Little Tern and Red-backed Button-quail). However, given the excessive residual number of credits it is highly likely that the application of variation criteria (i.e. criteria b 'convert one type of species credit to another type of species with the same or more endangered conservation status') permissible under a Tier 3 scenario would easily achieve an appropriate offset outcome. OEH recommends that the proponent investigate this avenue.

With respect to *Zannichellia palustris*, OEH acknowledges that there is an opinion that this species may not be native to NSW (i.e. possible aquatic / aquarium plant introduction, given it's cosmopolitan distribution from Europe, Africa, Central Asia / India through to North America), and as such conservation measures within the strategy have aimed at either in situ conservation, translocation and additional research. OEH supports this approach. Furthermore, it should be noted that Red-backed Button-quail was not recorded on site, its habitat was predicted. This species generated a significantly high number of 'species' credits due to having a high 'Tg' value, which is a multiplier used in determining the species credit requirement. OEH notes that this Tg value is high due to the lack of knowledge for this species. OEH accepts that the 'species' credits of similar conservation value can be traded for this species, as per the OEH interim policy.

The assessment also indicates that the proposal will impact on a number of vegetation communities that are considered in low condition (e.g. 'Disturbed land including exotic grassland' and 'Planted areas'). These have not been factored into the biobanking calculations as they do not meet the criteria of native vegetation, due to their predominant exotic nature. OEH supports this approach, but notes where they may contain specific habitat elements they were adequately addressed in the EA phase.

OEH has reviewed the submitted credit calculator files and the underlying assumptions provided in Appendix J and are generally satisfied that the developments impacts have been appropriately assessed under BBAM, though notes a number of minor operational issues described below that may require the re-running of the credit tool. BBAM operational issues that need to be addressed before OEH supports the proposal are:

- OEH notes that the submitted credit calculator files (Proposal ID: 0020/2012/0019D) submitted 9 February 2012 do not correspond completely to the data presented in Section 2.0 of Appendix 1 of

Appendix J (e.g. credit profiles are slightly different). OEH expects that the assessment presented in the updated 'biodiversity offset strategy' relates to the amended development footprint while that submitted in 2012 is the former footprint. Although the impacts and areas of vegetation are almost identical (albeit for lower conditioned vegetation), the most up-to-date credit calculator files should be submitted on the current proposed development footprint.

- As outlined above, (i) what credit variation criteria have been used under Tier 3 and how the 'Biodiversity Offset Strategy' achieves this, and (ii) justification should be provided as to why it is appropriate to apply the 'Tier 3' outcomes.

Use of BioBanking Methodology for Biobanking Offset Site (T4 Project site) (Proposal ID: 0020/2012/0348B)

OEH has assessed the use of the BBAM for the 'T4 Offset Corridor' biodiversity offset as outlined in Section 3.0 of Appendix 1 of Appendix J. This offset generates small amounts of 'ecosystem' credits for the two EEC vegetation types (Freshwater Wetlands and Coastal Saltmarsh), and 'species' credits for Australasian Bittern, Green and Golden Bell Frog and *Zannichellia palustris*.

OEH has reviewed the submitted credit calculator files and the underlying assumptions for this offset provided in Appendix J, and is satisfied that the credits generated have been generally calculated correctly under BBAM, albeit a number of minor operational issues described that requires justification and/or re-running of the credit tool. BBAM operational issues that need to be addressed before OEH supports the proposal are:

- Appropriate justification needs to be provided with respect to the increase in 'native vegetation cover class after management' from 1-10% to 11-20%. OEH acknowledges that the assumption is that Green and Golden Frog habitat / corridors will be re-created and improve vegetation cover, however, OEH requests adequate justification of how this will be achieved. Notably, how revegetation will occur and how it will achieve an increase in percent cover, including appropriate explanation of why the 11-20% class was used.
- Justification needs to be provided why groundcover (grassland vegetation – 'non-woody vegetation types') condition was chosen over overstorey condition (woody vegetation). OEH understands that the surrounding vegetation in the 1000 ha circles is a mosaic of non-woody types (i.e. *Sporobolus* and/or *Juncus* dominated Coastal Saltmarsh and *Typha / Phragmites* dominated Freshwater Wetlands) verses woody vegetation types (i.e. Mangroves), though it appears the cover of these two types are similar and difficult to separate. OEH requests explanation of how cover was measured and how the non-woody vegetation type was chosen over the woody.
- Justification needs to be provided why 'Hollow-bearing trees, bridges, caves or artificial structures within 200 m of riparian land' was not selected under the Geographic and Habitat Features component of the credit tool, as per the report (*OEH notes that in submitted credit calculator files this option is not available). This was selected for the development site assessment scenario and the T4 Habitat Corridor occurs within the same footprint.
- As outlined above, (i) what credit variation criteria have been used under Tier 3 and how the 'Biodiversity Offset Strategy' achieves this, and (ii) justification should be provided as to why it is appropriate to apply the 'Tier 3' outcomes.

Use of BioBanking Methodology for Biobanking Offset Site (Tomago Offset Site – Restoration) (Proposal ID: 0020/2012/0330B)

OEH has assessed the use of the BBAM for the 'Tomago Offset Site – Restoration' biodiversity offset as outlined in Section 4.0 of Appendix 1 of Appendix J. This offset represents a 238 ha site that will generate (i) 'ecosystem' credits for Freshwater Wetland EEC, Coastal Saltmarsh EEC (including extensive restoration of part of the site currently covered with Swamp Oak floodplain forest regrowth, along with recreating mud flats for migratory shorebirds) and Mangrove forest, and (ii) a variety of 'species' credits for Australasian Bittern, Black Bittern, Black-necked Stork, Black-tailed Godwit, Broad-billed Sandpiper, Great

Knot, Lesser Sand-plover, Pied Oystercatcher, Sanderling, Southern Myotis (breeding) and Terek Sandpiper. The bulk of the Coastal Saltmarsh ecosystem credits and the species credits for migratory shorebirds will be generated from this offset site. This offset site will include a mosaic of retained vegetation types, namely Swamp Oak floodplain forest in the southern part and Freshwater Wetland (known as the 'Rice Paddy') in the north, the latter represents important known habitat for the Australasian Bittern. The remainder if the site, the Central part, will be cleared of its current regrowth Swamp Oak forest and restored back to a functionally saltmarsh / mud flats complex. A similar restoration project has been successfully implemented, albeit at a smaller scale, on the adjacent Hunter Wetland National Park. OEH has supported this approach.

OEH has reviewed the submitted credit calculator files and the underlying assumptions for this offset provided in Appendix J, and is satisfied that the credits generated have been generally calculated correctly under BBAM, albeit a number of operational issues described that requires justification and/or re-running of the credit tool. BBAM operational issues that need to be addressed before OEH supports the proposal are:

- With respect to the '% native vegetation cover' entered at the before and after biobanking, the values added are different for both the 100 and 1000 ha assessment circles. It appears that this scenario is assuming that prior to the biobanking the 140 ha of the site that is being restored back to Coastal Saltmarsh is cleared (i.e. devoid of native vegetation cover) and that after biobanking has been applied (i.e. saltmarsh restoration) there will be a approximate 20 (1000 ha assessment circle) -60% (100 ha assessment circle) increase in cover (i.e. 2-5 cover classes depending on assessment circle). OEH does not agree with this assumption, given that for the site value and description of the site it was assumed that the 140 ha 'restoration area' was mapped as low condition Coastal Saltmarsh, not as cleared land prior to biobanking being applied. Under this scenario OEH believes that an inflated 'landscape' score as been applied. As such there is still native vegetation cover on the site before biobanking and OEH is of the opinion that this cover does not substantially change after biobanking has been applied. Hence OEH believes there is no justification for adding different values in the 'before' and 'after' biobanking scenarios. The site value gain will account for the improvement of the site (via improved vegetation condition) which is applied when adjusting the 'management scores'. OEH is of the opinion that the credit calculator will need to be amended and re-run, if it was assumed part of the site was cleared prior to biobanking.
- Justification needs to be provided why 'swamps or shallow freshwater on clay' was not selected under the Geographic and Habitat Features component of the credit tool. This habitat feature assumes that suitable habitat for *Maundia triglochinoides* may be present. Soil landscape mapping for the Newcastle area (Matthei 1995) maps the 'Tomago Offset Site' as estuarine landscapes dominated by Holocene sediments of estuarine mud, silt and clay. As such, OEH is of the opinion this feature should have been selected as the site contains swamps on clay soil types. Furthermore, *Maundia triglochinoides* has been recorded on similar landscapes less than five kilometres to the west of the Tomago Offset Site.
- As outlined above, (i) what credit variation criteria have been used under Tier 3 and how the 'Biodiversity Offset Strategy' achieves this, and (ii) justification should be provided as to why it is appropriate to apply the 'Tier 3' outcomes.

Use of BioBanking Methodology for Biobanking Offset Site (Ellalong Lagoon Offset Site) (Proposal ID: 0020/2012/0339B)

OEH has assessed the use of the BBAM for the 'Ellalong Lagoon Offset Site' biodiversity offset as outlined in Section 5.0 of Appendix 1 of Appendix J. This offset represents a 335 ha site that will generate (i) a variety of terrestrial and wetland 'ecosystem' credits Freshwater Wetland, Lower Hunter Spotted Gum – Ironbark forest and Hunter Lowland Red Gum forest EEC, and (ii) a variety of 'species' credits for *Acacia bynoeana*, *Grevillea parviflora* subsp. *parviflora*, *Zannichellia palustris*, Black Bittern, Green and Golden Bell; Frog, Red-backed Button-quail, Southern Myotis and Spotted Harrier. OEH notes that this site generates only a smaller amount of the credits required for the proposed development, notable Freshwater Wetland EEC and Green and Golden Bell Frog. OEH has accepted this offset on the basis that it has

strategic importance in that it is considered a 'High priority regional conservation area' as identified in the Lower Hunter Regional Conservation Plan (DECCW 2009).

OEH has reviewed the submitted credit calculator files and the underlying assumptions for this offset provided in Appendix J, and is satisfied that the credits generated have been generally calculated correctly under BBAM, albeit a number of operational issues described that requires justification and/or re-running of the credit tool. BBAM operational issues that need to be addressed before OEH supports the proposal are:

- Appropriate justification needs to be provided with respect to the increase in 'native vegetation cover class after management' from 51-60% to 61-70% in the 100 ha assessment circle No. 1. OEH acknowledges that the assumption is that part of the sites will be regenerated / restored but OEH requests adequate justification of how this will be achieved. Notably how revegetation (if applicable) will occur and how it will achieve an increase in percent cover.
- As outlined above, (i) what credit variation criteria have been used under Tier 3 and how the 'Biodiversity Offset Strategy' achieves this, and (ii) justification should be provided as to why it is appropriate to apply the 'Tier 3' outcomes.

Use of BioBanking Methodology for Biobanking Offset Site (Brundee Offset Site) (Proposal ID: 0020/2012/0321B)

OEH has assessed the use of the BBAM for the 'Brundee Offset Site' biodiversity offset as outlined in Section 6.0 of Appendix 1 of Appendix J. This offset represents a 200 ha site that will generates (i) 'ecosystem' credits Freshwater Wetland and Swamp Oak floodplain forest EEC and (ii) a variety of 'species' credits for Australasian Bittern, Black Bittern, Black-necked Stork, Green and Golden Bell Frog and Large-eared Pied Bat. The bulk of the Freshwater Wetland ecosystem credits and the species credits for Green and Golden Bell Frog and Australasian Bittern will be generated from this offset site.

OEH has reviewed the submitted credit calculator files and the underlying assumptions for this offset provided in Appendix J, and is satisfied that the credits generated have been generally calculated correctly under BBAM, albeit a number of operational issues described that requires justification and/or re-running of the credit tool. BBAM operational issues that need to be addressed before OEH supports the proposal are:

- As outlined above, (i) what credit variation criteria have been used under Tier 3 and how the 'Biodiversity Offset Strategy' achieves this, and (ii) justification should be provided as to why it is appropriate to apply the 'Tier 3' outcomes.

Based on OEH's technical review of the submitted credit calculator files, OEH would expect in addressing the above issues, the BBAM tool will need to be re-run and as such it is likely that this will result in a change to the number of biodiversity credits that will be either required (development site) or generated (Biobank sites). Although OEH acknowledges that these issues are likely of a minor operational manner, except for the Tomago Offset Site which will require some adjustments to be made, we will require the proponent to address these prior to OEH lending its full support to the proposal.

Threatened Species Issues for Consideration in the Compensatory Habitat Package

1. Green and Golden Bell Frog

In previous correspondence (dated 9 May 2012), OEH requested that the proponent demonstrate that consideration had been given to the feasibility of staging the Terminal 4 project so that areas of important and significant habitat are retained whilst 1. Green and Golden Bell Frog (GGBF) habitat re-creation is ongoing (as outlined in Appendix K, Section 6.0 'Impact Mitigation Strategy' of the EA) and breeding success in newly constructed ponds is shown to be successful, preferably over multiple seasons (i.e. two generations). OEH indicated that this would ensure that some breeding habitat was 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 acknowledges that PWCS has provided justification that indicates their design of the T4 project has considered appropriate avoidance strategies and investigated the possibilities

of a staged approach, including reasons as to why this is not feasible due to infrastructure requirements. However, OEH is still of the opinion that a staging proposal and/or an over-arching management agreement between all land-users that impact GGBF habitat would ensure that critical habitats are managed appropriately, retained and/or not indirectly impacted upon, such as Pond 'K22' on Newcastle Port Corporation land that occurs on the northern boundary of the T4 Project. For example, the retention and long-term management of this area is considered critical for the maintenance of the Kooragang Island population of GGBF, as it is recognised as significant breeding habitat.

If the project is approved, OEH considers that staging should still be investigated to ensure appropriate GGBF habitat is maintained in situ during the construction phase the 'habitat corridor offsets'. Furthermore, OEH recommends that the proponent consider perusing discussions with other land owners/ users of Kooragang Island which impact on GGBF to ensure the long-term survival of the species, rather than managing in isolation on specific areas in separate ownership. This would help facilitate a more co-ordinated approach to the species management at the Kooragang location. The PWG in their submission below also re-iterate this point. OEH would support a development condition that established a Green and Golden Bell Frog management framework and advisory committee for Kooragang and Ash Islands with representatives of industry, landowners, government and community.

2. *Migratory Shorebirds and Waders*

Similarly OEH expressed concerns in our previous correspondence that the EA assessment did not provide adequate justification of the loss of significant foraging and roosting habitat that 'Deep Pond' provides for a variety of shorebirds and waders (including threatened species, such as the deep-diving Blue-billed and Freckled Ducks). The Umwelt 'response to ecology matters (Appendix B)' appears not to address OEH's concerns. As such OEH requests the proponent to address our concerns on this matter as outlined in correspondence dated 9 May 2013.

Tomago Offset Site - Environmental Impact Assessment

OEH has completed a review of the biodiversity and threatened species sections (including the 'assessment of significance' components) of the Environmental Impact Assessment (EIA), namely Appendix K as authored by Umwelt (August 2013), and generally concurs with their conclusions and outcomes of the assessment utilising the BBAM (DECC 2008). OEH acknowledges that although this site contains intact native vegetation communities, in part, parts of the site are considered highly disturbed with areas of Swamp Oak regrowth. As such this site is being offered as the 'Tomago Offset Site – Restoration' biodiversity offset as outlined in Section 4.0 of Appendix 1 of Appendix J, which will provide a mosaic of retained higher quality vegetation (as described above) and re-created saltmarsh / mud flat habitat. OEH supports this proposal, as it is providing habitat commensurate or in better condition to that which currently exists.

OEH acknowledges that the impact assessment on threatened species, ecological communities and their habitat on the Tomago Offset Site has utilised the BBAM under both a development and BioBanking scenario as defined under Section 127B of the TSC Act and the 'BioBanking Assessment Methodology and Credit Calculator Operational Manual' (OEH 2011a). OEH supports this approach as this is consistent with how threatened species impacts can be formally assessed under other parts of the *Environmental Planning and Assessment Act 1979*.

Conservation in perpetuity of offset lands and management plan

OEH understands that the proponent has proposed that the biodiversity offset areas as outlined in the 'Biodiversity Offset Strategy' (namely Brundee, Ellalong Lagoon and Tomago Offset Sites [Note: excluding the T4 Habitat Corridor located within the T4 Project footprint]) will be conserved and managed in the long-term through reservation in conservation estate as managed under the *National Parks and Wildlife Act 1974*. OEH supports this approach depending on the condition of the land at hand over (i.e. they are

appropriately maintained to ensure biodiversity values are retained) and provision of appropriate funding to manage the sites in the future.

OEH understands that it is intended that these sites will not be handed over to the NSW conservation reserve system (National Parks and Wildlife Service) until the T4 Project commences. Although OEH has no objections to this intention it is recommend the following constraints / conditions, if project approval is granted:

- All proposed biodiversity offsets should be conserved under appropriate conservation mechanisms at the start of project construction (e.g. NPWS conservation reserve) and/or appropriate agreements (e.g. Memorandum of Understanding be put in place to ensure that offsets will managed in the long-term prior to future hand over.
- Any future hand over of offset lands needs to consider the provision of appropriate funding for future management.
- Given it appears there will be a lag time between when (and if) the T4 Project commences and approval (if given) the proposed offset sites will require ongoing maintenance to ensure their biodiversity values are maintained. As such temporary / short-term conservation mechanisms should in place during this interim phase, including the design and implementation management plans.
- The development of a Memorandum of Understanding, including maintenance funding and an assessment of what works would be required to 'make good' any lands that are to be transferred to NPWS.

If transfer to the NPWS conservation reserve system is not chosen as the mechanism to conserve and manage the biodiversity offset sites in the future, then OEH would support the following options as appropriate conservation mechanisms:

- the establishment of biobanking sites with biobanking agreements under the *Threatened Species Conservation Act 1995* (TSC Act)
- a Conservation Agreement under the NPW Act
- a Trust Agreement under the *Nature Conservation Trust Act 2001*
- a Planning Agreement under s 93F of the *Environmental Planning and Assessment Act 1979.*

References

DEC (2004) *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities.* Working Draft. November 2004. Department of Environment and Conservation (NSW). This document is available at: www.environment.nsw.gov.au/resources/nature/TBSAGuidelinesDraft.pdf.

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

DECCW (2009) *Lower Hunter Regional Conservation Plan.* Department of Environment, Climate Change and Water NSW, Sydney.

Matthei, L.E. (1995) *Soil Landscapes of the Newcastle 1:100 000 Sheet.* Map, Department of Land and water Conservation, Sydney.

OEH (2011a) BioBanking Assessment Methodology and Credit Calculator Operational Manual. Office of Environment and Heritage (NSW), Goulburn Street, Sydney. www.environment.nsw.gov.au/biobanking/calculator.htm

OEH (2011b) 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

The items outlined below were identified as issues to be addressed within the initial review of the EA by OEH Parks and Wildlife Group (Central Coast Hunter Range Region). The issues outlined directly affect the NPWS Estate, the affect on the ecological function of the adjoining reserve, and the proposed offset sites at Tomago, Ellalong Lagoon and the Brundee offset site.

Each of the issues as previously presented are outlined, along with the PWCS response (both within the response to submissions report and the information gained form the PWCS presentation made in Newcastle 20-11-13). The Parks and Wildlife group response is also detailed.

Main Issues:

1. ***Original EA Issue:*** *Offset strategy. More detail needs to be provided about the offsetting of the loss of saltmarsh and mangrove habitat by the Hunter Estuary Wetlands Offset Site (Appendix K, Section 7.4.1.) Major works are proposed for this offset site to create saltmarsh and foraging habitat for shorebirds, however, there is an assumption that approval will be given for such works. The works proposed will also require long-term management and maintenance such as management of the sluce 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 PWCS. Although the area in question has not been formally identified in the report, NPWS understands the area adjoins NPWS estate where a major rehabilitation project is being undertaken and any offset works need to be complementary to this major initiative.*

    - PWCS Response: The Response to submissions documentation indicates that the design presented for Tomago is a concept design and further discussions need to be held with OEH regarding the final design and integration with the existing rehabilitation work being undertaken on adjoining National Parks Estate at Tomago. Discussions at the PWCS presentation indicated that a Memorandum of Understanding (MoU) between OEH and PWCS regarding the finalisation of the design should be developed with consultation with NSW DP&I which would be a condition of development consent. PWCS acknowledged that on-going funding would be required for maintenance of any offset that would be transferred to NPWS and the MoU should also reflect any funding agreement.

    - PWG response: The development of a MoU is appropriate within the Development Consent Conditions, including maintenance funding and an assessment of what works would be required to 'make good' any lands that are to be transferred to NPWS. Additionally, the timing of when works commence at Tomago to establish migratory wader habitat in relation to when works at T4 commence should be considered so that no net migratory wader habitat is lost during the construction phase of T4.

2. ***Original EA Issue:*** *The footprint appears to overlap NPWS estate north of the railway line, east of Mosquito Creek. NPWS understands that NPWS Estate (and RAMSAR area) occurs up to the railway line in this area, yet there is a discussion about the loss of Freshwater Wetland habitat (Appendix 4, Section 5.3.7.3, and Figure 4.1 also see Appendix J, Figure 8 for more detail).*

    - PWCS Response: The Response to submissions documentation (Appendix L) indicates alteration to the existing levee height will mitigate any changes to the tidal regime.

    - PWG response: Discussions have been held with PWCS subsequent to the EA exhibition and the matter will be dealt with through an REF process as the existing levee is on-park and is outside of the T4 footprint. PWG is satisfied that the matter has been dealt with through the additional studies and documentation.

3. ***Original EA Issue:*** *Realignment of watercourse off Mosquito Creek (Mosquito Creek Tributary, Appendix J, Section 8.2.2, and Figure 6.). Any realignment works need to be restricted to the infrastructure SEPP areas and no works are to be conducted within the NPWS Reserve system. Also, adequate environmental assessment of the proposal needs to be conducted as the report (page 48,*

page 550 of 582 of volume 3) indicates ... " 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.

- PWCS Response: The Response to submissions documentation indicates further assessment of impact has been conducted and the removal of the levee will result (through modelling) in a mangrove dominated community being formed.

- PWG response: Discussions have been held with PWCS subsequent to the EA exhibition and the matter will be dealt with through an REF process as the existing levee is on-park and is outside of the T4 footprint. Although removal of the levee is proposed by PWCS, not removing the levee should also be considered to reduce the chance of mangrove recruitment into the existing saltmarsh. PWG is satisfied that the matter has been dealt with through the additional studies and documentation.

4. ***Original EA Issue:*** *Sustainability of Green and Golden Bell Frogs on Kooragang and Ash Island. The proposal will remove critical habitat of the Green and Golden Bell Frog, the loss of this habitat may seriously compromise the viability of the animals on Kooragang and Ash Island. Off setting habitat for the Green and Golden Bell Frog in southern NSW is not a substitute for existing significant extant population. The work by Andrew Hamer demonstrated the interdependence of the ponds on Kooragang, in particular Pond 12 and Pond 11 with Railway Road Pond and OEH Wetland 1 on Ash Island (see figure 1.3 Appendix K). The proposal to significantly increase the width of the railway corridor in the area around OEH Wetland 1, thus creating an increased impediment for frog movements. The Green and Golden Bell Frog Conceptual Corridor habitat Design (see Section 6.3.3, Appendix K), does indicate the construction of culverts of fauna movement corridors to facilitate frog movement; however the efficacy of this approach is yet to be demonstrated.*

   - PWCS Response: Whilst we acknowledge the proposed T4 development impacts on the current environment, particularly for green and golden bell frogs and migratory wading birds, we believe alternative designs to avoid such habitat provide no clear environmental advantage. Our commitment to a very strong offset package, inclusive of a green and golden bell frog habitat corridor on the T4 site, as well as the mitigation of risks associated with attempting to retain species such as the green and golden bell frog on□site during dredging and construction work over a period of three to four years, strongly supports our preferred T4 design case and sequencing of construction. (Volume 1 - S14.3.2v)

   - PWG response: The continued viability of the Green and Golden Bell Frog on Kooragang/Ash Island has not been demonstrated within the documentation. Discussions were held within the government agencies meeting regarding the development of a joint industry/government approach to the overall management of Green and Golden Bell Frog habitat on Kooragang Island. A development consent recommendation would be for PWCS to establish a Green and Golden Bell Frog management framework and advisory committee for Kooragang and Ash Islands with representatives of industry, landowners, government and community.

5. ***Original EA Issue:*** *Oil and gas pipeline realignment (and water main realignment). The proposal indicates the realignment of the Sydney-Newcastle Oil and Gas Pipeline, and the proposed easement shown in 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 and remain in situ as this is a significant wetland for the green and Golden Bell Frog.

- PWCS Response: As per OEH's recommendation, the section of existing gas pipeline that is no longer required is proposed to be isolated, decommissioned and remain in situ.
- PWG response: PWG is satisfied that the matter has been dealt within the documentation.

5. ***Original EA Issue:*** *Dredging and changes in tidal prism. Although development consent for dredging of the Hunter River (see Section 1.1.1, Appendix K) has been given approval by NSW Maritime, 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 EPBC Act 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.*
   - PWCS Response: Dredging was not specifically addressed in the EA as it is being dealt with through a separate approval process.
   - PWG response: PWG is satisfied that the matter has been dealt within the documentation.

ABORIGINAL CULTURAL HERITAGE ASSESSMENT

OEH had no outstanding issues with respect to Aboriginal cultural heritage matters and as such requests that any approval given is in accordance with our advice provided in OEH correspondence dated 9 May 2012.

OEH - NOVEMBER 2013