NSW GOVERNMENT | Office of Environment & Heritage

Your reference: 10/18197
Our reference: DOC13/38399; FIL10/12424; Part 3A
Contact: Steve Lewer, 4908 6814

Mr Chris Ritchie
Manager – Industry, Mining and Industry Projects
Department of Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2324

Attention: Emma Barnett

Dear Mr Ritchie

RE: REVIEW OF ENVIRONMENTAL ASSESSMENT FOR NORTHBANK ENTERPRISE HUB (MP 10_0185), TOMAGO

Reference is made to the Department of Planning and Infrastructure (DP&I) letter received 11 September 2012 requesting comments on the accompanying 'Northbank Enterprise Hub Pty Ltd Environmental Assessment Report' (including its appendices, dated 24 August 2012 (the EA)), including any recommended conditions of approval. The Office of Environment and Heritage (OEH) understands the EA was on public exhibition from 14 September 2012 to 30 October 2012 and that it is a transitional Part 3A project under the *Environmental Planning and Assessment Act 1979.*

OEH has undertaken a review of the EA and has provided detailed comments in **Attachments A and B**. OEH acknowledges that with respect to biodiversity, the EA has generally addressed OEH's previous concerns raised in correspondence dated 27 January 2012, albeit additional comments are raised in Attachment A. However, OEH still has major concerns regarding stormwater, regional flooding, floodplain data and calculations, indirect impacts on adjoining conservation lands (including proposed offset areas and rehabilitation lands) and Aboriginal cultural heritage. As such OEH is unable to offer our support to the proposal until these outstanding issues are appropriately addressed. Briefly, OEH's concerns relate to:

- stormwater impacts and assessment
- regional and localised flooding impacts
- further quantification of the impacts on and management of the coastal floodplain
- inadequate assessment of Aboriginal cultural heritage values and likely associated impacts
- management of Aboriginal cultural heritage
- specific details on likely conservation offsets that will be offered to compensate the loss of biodiversity and habitat on the subject site
- further clarification of targeted flora survey effort.

In summary, OEH still has significant concerns with some sections of the EA and requires further detail and information in order to properly assess the proposal. These issues are discussed further in Attachment A. Until these issues are adequately addressed OEH is not in a position to support the EA. As such, OEH have been unable to develop draft conditions of approval, but will provide these (if necessary) once the above issues have been resolved.

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

Yours sincerely

30 OCT 2012

RICHARD BATH
Head – Hunter Planning Unit
Regional Operations Group, North East

Enclosures: Attachments A and B

ATTACHMENT A: OEH REVIEW – OUTSTANDING ISSUES

STORMWATER ASSESSMENT AND REGIONAL FLOODING

The following issues relate to further clarification of the impacts on and management of the coastal floodplain to which the subject site is located on.

1A. Regional Flooding Assessment – Appendix F

The following comments relate to Appendix F of the EA - BMT WBM 'Northbank Enterprise Hub Business and Industrial Park – Regional Flooding Assessment' dated August 2012 (referred to as the Flood Study).

(i) Comparison to Previous Studies

The report discusses the discrepancy between results shown in this report and those shown in a report completed earlier by DHI (2008). The discrepancies with the DHI report are not clearly represented in a table format or similar to compare the actual differences between the two models, and therefore these discrepancies are not considered to be resolved. The DHI model was able replicate the 1955 and 1990 floods, and the Office of Environment and Heritage (OEH) understands that the downstream constriction was not included in the DHI report as stated by BMT WBM. Nevertheless, the DHI report states that this section of the floodplain would be a floodway once water levels reach 3.0 m Australian Height Datum (AHD).

(ii) Filling in Floodway

Section 6.4.1 states that "*the proposed fill footprint has been excluded from any nominated floodway area*". This comment seems to contradict Figure 3-2 of the Flood Study, which clearly indicates the floodway for the 1% Annual Exceedance Probability (AEP) design flood event with the outline of the proposed fill footprint. The location of the existing floodway as shown on Figure 3.2 can be compared to the information presented on Figure 2.5 and 2.8, which clearly indicate fill is proposed within the areas conveying the highest unit discharge on the left overbank of the Hunter River North arm.

There is an historical flood runner to the south of the development which can be seen in historical photos as well as with the topography of the land. The impacts of the proposed fill are most pronounced when changes to the peak velocity are examined – which is indicated on the most south-east corner of the development, which corresponds to the location of the existing historical flood runner.

As a matter of principle, filling in a floodplain to facilitate development is considered against best practice, unless there are very compelling reasons for the development to be sited at that particular location. Filling in the floodway areas is generally discouraged, and there are no strong arguments presented in this proposal for this filling to occur, particularly in the floodway areas.

(iii) Impacts of Development

Adverse impacts are indicated in the 1%, 2%, 5% AEP and Probable Maximum Flood (PMF) events, for both the peak flood level and peak velocity. Section 3.2 of the report states that these increase in flood levels are realised to the west of the proposal area on existing property, as well as up to three (3) kilometres upstream of the proposal area.

There is no evidence that the affected landholders have been consulted or these impacts been discussed with the proponent. OEH can not endorse a development that has adverse flooding impacts on existing properties without the consent of the affected property owners.

1B. Flooding and Drainage Assessment

The following comments relate to Appendix F of the EA – 'Northbank Enterprise Hub Business and Industrial Park – Flooding and Drainage Assessment' BMT WBM dated August 2012.

- The site stormwater drainage seems to rely wholly on open channels to convey stormwater to the site discharge points. The amount of "freeboard" or overflow allowance has not been indicated for the channel design, nor is it clear if blockage has been allowed for in the inlet capacity design of the stormwater drainage system.

- No sensitivity analysis has been carried out on the open channel flow restriction potential from either sediment deposition in the swale due to the very flat longitudinal grade, or from vegetation growth. Both of these need to be examined to determine the sensitivity of the channel conveyance, and therefore freeboard required for the fill to the adjacent areas.

- Section 7 states that "*it is assumed that the adoption of appropriate site gradings will be adequate to convey rainfall into the five proposed drainage swales*". This is an incredibly large site, and so it must be ensured at this stage that the "catchments" to each of the proposed drainage swales can actually be realised (as shown on figure 6.1 and 6.6), otherwise the drainage swales will need to be redesigned to convey the correct capacity. This needs to be indicated in a plan, something similar to a site grading plan for the site that includes the catchment to each of the drainage swale catchments.

- Section 7 discusses "partial bund around the perimeter of the site" that connects in to Section C of the drainage channel around the site. It is anticipated that this section of the development is no longer going ahead (i.e. no longer being filled) as shown as Channel 4 in the Stormwater assessment report.

- It is unclear why the bund has been designed to that particular level – the existing 1% AEP flood level is approximately 2.4 mAHD at the east boundary of the development and 2.8 mAHD at the west boundary. The report states that it is a "*partial flood bund is a 700m long flood defence bund with 1.2 MAHD crest level*".

- Section 7 discusses the 'existing discharge points onto Kooragang Nature Reserve" (now Hunter Wetlands National Park), however, these have not been indicated on any figure. The section also discusses the discharge points during a 1% AEP event, however all events, up to and including the PMF, need to be included in this analysis. This is particularly important when considering the impacts for the more frequent storm events, due to the sensitive nature and extent of the receiving environment (i.e. endangered ecological communities [EEC]).

- Figure 7-2 indicates increases in flood levels external to the site – particularly to the east of the north-South drain. These impacts are on existing properties that are not owned by the applicant, and on an area that is primarily covered by wetlands and EEC. Therefore the increases should be as negligible as possible. The current impacts are unacceptable.

2. Stormwater Assessment – Appendix G

The following comments relate to Appendix G of the EA - BMT WBM 'Northbank Enterprise Hub Business and Industrial Park – Stormwater Assessment' dated 17 August 2012.

(i) Introduction

The introduction of the report states "*The assessment outlined in this report is based on a previous development layout that was modified following completion of the modelling. We understand that the only significant change to the previous layout is associated with a reduction in developable land adjacent to the eastern boundary of the Project Site. Specifically, we understand that Sub-catchment 4A and the adjacent*

reach of Channel 4 (refer to Figure 6-1) are no longer proposed for development as this land (approximately 14.5ha) has been confirmed as part of an area of Endangered Ecological Community (EEC). Therefore, the estimated runoff and pollutant loads outlined in this assessment are likely to be higher (approximately 5%) than would be expected from the reduced development footprint. The development impacts from the modified layout are subsequently expected to be slightly lower than presented in this assessment".

This has been taken in to consideration with the following comments.

(ii) Section 2.2

The following statement in section 2.2 is inaccurate and needs to be revised:

"Current best practice treatment measures including biofiltration measures that continuously filter runoff during a storm event are highly effective at treating greater runoff depths". Current Best Practice considers Water Sensitive Urban Design (WSUD) elements to be effective at low flows. Bio-retention is generally designed to cater for flows less than the 1 year ARI (99% AEP) design flows, and becomes less effective the greater the flows.

(iii) Section 4.3.2

OEH is of the opinion all of Section 4.3.2 needs revision.

The stream forming flow / erosivitiy index must be defined for each of the stormwater outlets from the site to ensure the impacts on the receiving environments are minimised. The site is surrounded by wetlands; EEC's; a Ramsar wetland, and an ecological offset area, therefore it is imperative that hydrological disturbances to these ecosystems are minimised.

This is especially important considering the information shown in Figures 7-1 – 7-6, as they indicate that the post development stormwater runoff regime from the site is considerably different to the existing regime.

Generally, Port Stephens Council would require developments to maintain the post development stormwater runoff rates and volumes to existing rates and volumes, or as close as possible to existing.

(iv) Section 6.2

The rainfall data range of 1999 – 2006. It has not been adequately indicated whether this information includes average, wet and dry rainfall years. Current best practice generally involves the use of a date range that includes a minimum of twenty (20) years of rainfall data.

(v) Biofiltration

a) Section 6.4 states *"Biofiltration swales constructed along elevated benches within the main drainage channels"*. It is unclear what an elevated bench actually is. Is this above the existing levels, or above proposed fill levels?

b) It is unclear what longitudinal grades these bio-retention channels would actually be able to achieve on site. Section 5.4 states that the swale will have a longitudinal grade of 0.5 – 1% - current best practice would require an underdrain or the like if swales have a longitudinal grade less than 2%. Therefore, it is important the longitudinal grades of the bio-retention channels are indicated, as they are currently considered below current best practice.

c) The biofiltration designs shown in Figures 6-3 and 6-4 need revision. It is unclear what a 'bio-retention unit' actually is, and there is no way that any form of 'bio-retention' can be elevated above the invert of a channel which it discharges to – it is anticipated that the hydraulics from such a system would not work and the 'bio-retention unit' would be saturated so long as the channel immediately adjacent to it

has water in it. It must also be noted that it is anticipated that this development could have tidal impacts, which have not been taken into account with the stormwater drainage design. The 'typical bio-retention swale configuration' as shown in Figure 6.5 cannot work as shown on Figures 6.3 and 6.4

(vi) Location and Design of Outlets of the Drainage Channel

The location and design of the outlets of the drainage channel are unclear – both how they hydraulically connect to the downstream receiving environment, and what their physical design is.

(vii) Figure 6 – 1

It is unclear where channels 1a and 1b connect in to, prior to discharging from the site.

(viii) Bio-retention Swales

The location of the bio-retention swales shown on Figure 6-6 do not correspond with the location of the drainage channels shown on Figure 6-1.

(ix) Flow regime

a) Section 7.2 states that low and high flow duration frequency curves were plotted for each site, however only one site has been reported. Either the text in the report needs updating, or additional graphs need to be included in the report.

b) Figures 7 -1 – 7-6 – The information contained within these figures indicates that there will be a dramatic increase in all of the high and low flow duration scenarios from existing conditions (7-day, 30-day and 60-day), even with mitigation options in the post-developed scenario. The post-developed scenario needs to mimic the existing runoff regime as closely as possible, so as to minimise the disturbance on the receiving environments. As mention above in point 1-3, the site is surrounded by wetlands; EEC's; a wetland, and an ecological offset area, therefore it is imperative that hydrological disturbances to these ecosystems are minimised.

The current stormwater drainage system proposal (assumed to include bio-retention swales, grassed swales, and bunded area) indicates that the low flow duration frequency for all events modelled (7-day, 30-day and 60-day) is between 2 and 4 times greater than existing conditions. This could have long-term adverse impacts on the wetlands to the east and south-east which are currently undergoing rehabilitation from freshwater wetlands to saltwater wetlands by the National Parks and Wildlife Service.

This may be assisted by using more sub-catchment based water management facilities, such as wetlands or storage ponds, which have a greater capacity for open water evaporation.

The current hydrological regime discharging from the site is unacceptable and needs review so that there are minimal adverse impacts on the receiving environment.

(x) Climate Change

It appears that the stormwater drainage design does not take in to account climate change considerations. These needs to be included in the design review, particularly with the drainage capacity of the channels at their outlets. The potential for drowned stormwater drainage outlets has the potential to flood upstream on the site itself due to localised catchment flooding. This also has implications for the design of the 'bund' as it does not appear to have any freeboard applied to its crest level.

(xi) Cumulative Impacts of Adjoining Development

It is unclear how the stormwater runoff and drainage from the existing Westrack development to the north-east relates to this development. Was it included in the analysis? What were the assumptions used?

(xii) Comparison to Figure 14 in the EA – Volume 1 Report

Figure 14 of the EA Volume 1 report indicates a "*overflow wetland rehabilitation area*" as well as "*Retained Oak Forest EEC*". It is unclear if these areas sit behind the proposed "bund".

a) It is unclear what role the "*overflow wetland rehabilitation area*" is supposed to play – is it for aesthetic or amenity purposes only? Was it taken in to account with the surface water storage capability of the site in conjunction with the storage capacity in the swales?

b) Section 6.3.1 of the EA Volume 1 states "*that the proposal will have no unacceptable impact on these communities*", however, if the intent it to store stormwater behind the bund, then there will be a change in the hydrological regime of that ecosystem which would most likely be adverse to that ecological community.

c) Page 95 states that "*mitigation includes maintaining hydrology of surface runoff after land filling both during and after the construction phase of the proposed development*". As mentioned above, the results included in Figures 7 -1 – 7-6 of the Stormwater Assessment report indicate that this is clearly not the case.

3. Hunter Valley flood Mitigation Scheme

The future function or need for the existing Hunter Valley flood Mitigation Scheme assets have not been discussed. It appears that the proponent assumes that they will continue to be maintained in their present condition. It would be inappropriate for the government to continue to maintain assets that provide a benefit only to the proposed development.

4. Section 256 of the Water Management Act

The whole of the proposed development is located on a "*Declared floodplain*" under section 256 (6) of the *Water Management Act 2000* (WM Act). The WM Act requires that the consent of the Minister for Water must be obtained prior to construction of a "*flood work*" on a declared floodplain. The proposed filling of the floodplain constitutes a "*flood work*". OEH administers chapter 5 Part 2 of the WM Act on behalf of the Minister for Water. Page 62 of the EA Volume 1 report states that a separate application will be made by the proponent for this approval.

In its current form, the development can not be supported on floodplain management grounds.

Reference

DHI (2008) *Upgrading of Lower Hunter Flood Model at Hexham.* Report prepared for Newcastle City Council, September 2008.

THREATENED SPECIES

In general, OEH is of the opinion that the 'Ecological Assessment of the Northbank Enterprise Hub' (Appendix D of the EA, authored by EcoBiological, August 2012) is adequate, however, the following matters need to be addressed before OEH can offer its full support for this aspect of the proposal:

- targeted flora surveys
- submission of the Biobanking Assessment Methodology credit calculator files and documentation in accordance with Attachment B
- further details on the proposed offset package.

1. Fauna and flora surveys

OEH acknowledges that the general baseline flora and fauna survey components for the proposal appear to be adequate or the reasoning provided for deviating from recommended methodologies, including timing of sampling, appear to be justified. OEH requested in its adequacy assessment of the Draft EA (as per correspondence dated 27 January 2012 and 3 February 2011), that all flora and fauna surveys undertaken should be to the requisite standard as specified in OEH guidelines (DEC 2004). To determine the adequacy of the surveys OEH requested additional clarification of how the stratification units were determined and how fauna survey design was applied to these units. OEH recommended that the proponent provide a table that details sampling methods and survey effort per stratification unit. Such details have been provided in Table 1 (Schedule of activities and weather conditions during the survey period) and Appendix 3 of the 'Ecological Assessment' report, and are compliant with OEH previous request. Additionally, OEH notes that Figure 7 schematically represents the fauna survey effort overlaying the vegetation map, which was also requested.

2. Targeted surveys – flora

OEH notes that that the main flora surveys were conducted in June and October 2010 and targeted threatened flora searches were conducted on 22 and 29 November 2010 (as specified in Table 1 of the ecological assessment). Figure 6 'Flora survey effort over vegetation mapping' provides a schematic overview of the flora survey effort included targeted searches.

Table 10 in the 'Ecological Assessment' report provides details of potential threatened flora. Five taxa have suitable habitat on-site and as such have the potential to occur on the proposal. In respect to Trailing Woodruff (*Asperula asthenes*), Noah's False Chickweed (*Lindernia alsinoides*) and Small Water-ribbons (*Maundia triglochinoides*), OEH acknowledges that sampling for these taxa occurred during their known flowering times, and they were not detected on-site. As such, OEH concurs with the 'assessment of significance' undertaken on these species in Section 4.2, and is of the opinion the proposal is unlikely to adversely impact on these species or their habitats. Nevertheless, OEH is aware that *Maundia triglochinoides* has been recorded within the proposed offset area on the upper North Coast and would likely offset any precautionary concerns relating to this species and/or its habitat.

With respect to the other potential threatened flora, namely the summer-flowering taxa, OEH is of the opinion that they have not been adequately sampled. As such, OEH recommends appropriately timed targeted surveys in accordance with OEH guidelines (DEC 2004) be undertaken for the following potential taxa, unless appropriate evidence is provided that such surveys have already been undertaken or appropriate justification (i.e. expert opinion) as to why these species are unlikely present on the subject site:

- **Tall Knot-weed (*Persicaria elatior*)** – flowers January to February (February - April for fruiting) (Benson & McDougall 1999); inflorescence required to separate species in genus (i.e. small clusters / individual flowers cf. dense spikes, elongated [as in *P. elatior*] or sub-globose spike-like racemes [Harden 2001]). Potential habitat on site would include freshwater wetlands, damp places, channel banks and swamp forest (Harden 2001). OEH does not concur with the EA assumption that the '*species was not identified as occurring in the study area; and therefore the proposed development is unlikely to place a local population at risk of extinction*", given that the species was targeted outside the time when it would likely be detectable.
- **Horned Pondweed (*Zannichellia palustris*)** – flowers during the warmer months, namely summer (Harden 1993); species acts as an annual in NSW, and typically dies off at the end of summer, hence unlikely detectable during cooler months; occurs in fresh to brackish, still to slowly moving waters; known from the Hunter Wetlands National Park. Potential habitat on site would include freshwater wetlands and channels. OEH does not concur with the EA assumption that the '*species was not identified as occurring in the study area; and therefore the proposed development is unlikely to place a local population at risk of extinction*", given that the species was targeted outside the time when it would likely be detectable.

3. Threatened species assessment

OEH has completed a review of the threatened species assessment of significance (Section 4.2 of the 'ecological assessment' report), and generally concurs with its conclusions or is of the opinion that the proposed conservation offset utilising the Biobanking Assessment Methodology (BBAM) will likely provide commensurate or better compensatory habitat for the proposal.

Furthermore, OEH understands that in determining a suitable conservation offset, the BBAM will be applied to assess the impacts of the proposal and as such we would generally support 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* (EP&A Act). Nevertheless, OEH requires the full details of the process as outlined below to determine whether or not BBAM has been correctly applied. Once this information is provided in the proposed offset report, OEH will be in a position to provide full appraisal of the adequacy of any threatened species section, including the assessment and suitability of any compensatory conservation measures. To assess whether or not BBAM has been correctly applied, OEH require the proponent to submit the relevant credit calculator files and documentation as outlined in Attachment B. As such OEH requests that the Department of Planning and Infrastructure (DP&I) recommend this to the proponent.

Please Note: On 1 April 2012, the BioBanking Credit Calculator Version 2 has become the compulsory version of the tool to use for BioBanking assessments (see www.environment.nsw.gov.au/biobanking/calculator.htm for further details). The credit calculator is now web-based and no longer produces 'xml' files. Instead a copy of the assessment can be sent electronically to OEH by following the steps outlined in Attachment B The requirement of submitting background files for OEH to use in checking the BioBanking assessment still stands and is also explained in the attachment.

OEH previously requested further information (as per our adequacy review of the Draft EA) on the impact of the proposal on two threatened species:

- Eastern Grass Owl (*Tyto longimembris*)

OEH previously raised concerns with the EA and its assessment of impacts on the Eastern Grass Owl, specifically noting the proposal would result in the direct loss of habitat for Eastern Grass Owl known to utilise the site, and the possible loss of one of the seven groups/individuals that make up the local population (which equates to 14% to the local population). The EA has provided additional information in relation to the impact on this species. The proposal will likely impact on one family group, removing approximately 43% of the local foraging habitat. However, it is noted that the recent rehabilitation works in the Hunter Wetlands National Park has further added to loss of local foraging habitat, as well leading to habitat fragmentation.

In general, the species utilises the most modified vegetation on site, that being the introduced grasslands. As such the EA concludes that the loss of approximately 240 hectares this grassland type which represents Eastern Grass Owl habitat will only correspond to a loss of 0.01% of suitable habitat in the local area (Newcastle – Port Stephens, as shown on Figure 13. OEH concurs this is unlikely to be considered significant and supports the view that the proposal will not adversely impact on this species.

- Australasian Bittern (*Botaurus poiciloptilus*)

OEH considers the Tomago wetlands area (including the project site, Hunter Wetlands National Park, and Hunter Estuary Wetlands Ramsar site adjacent to the project site) to be vital habitat for the local Australasian Bittern population, and a habitat stronghold in the Lower Hunter estuary. The Tomago wetlands area provides ideal foraging, reproduction and nesting / roosting sites for this species. The presence and abundance of *Phragmites australis* and *Typha orientalis* within the project site indicates the area is suitable roosting / nesting habitat for the Australasian Bittern. Based on the above, and coupled with the numerous local records of the species, OEH considers the Australasian Bittern to be a key species of concern with regards to any potential impacts on the Tomago wetlands area. As such OEH is of the viewpoint that the may adversely impact this species and/or its habitat. Given the poor quality and nature of the likely habitat on-site (i.e. weed infested and (in part) human-induced) OEH is of the opinion that if approval is given for the proposal then suitable habitat for this species must be provided in any offset package. OEH understands from the proponent's ecological consultants (EcoBiological) that the proposed upper North Coast offset area contains suitable freshwater wetland habitat. Once offset package is provided, OEH will be in a position to provide full appraisal on whether or not this species habitat has been adequately conserved and compensated for in the proposed offset area.

4. Impacts on Adjoining Conservation Lands

OEH has concerns that stormwater generated from the proposal and surrounds is being funnelled towards the Hunter Wetlands National Park and proposed conservation offset lands owned by Port Waratah Coal. Both these areas are or will be subject to major rehabilitation projects of Coastal Saltmarsh, a community which does not respond favourably to freshwater incursion or increases in freshwater flow. This issue and specific concerns is addressed further in this response, under the 'National Park Estate' section. To ensure the success of these projects OEH requests the issues raised below and that DP&I ensure the proponents liaise accordingly with OEH Parks and Wildlife Group (i.e. NPWS) at Shortland and Port Waratah Coal.

The above point raises additional concerns of the overall impacts of potential increased flooding due to the loss of floodplain area (i.e. proposed infilling of the site) on adjacent or downstream lands and the potential impact on associated threatened species habitat, ecological communities and groundwater dependant ecosystems. This issue is addressed under the flooding / floodplain section above.

The proposal has the potential to impact on the Tomago Wetland Rehabilitation Project, as discussed further below, which is located adjacent to the proposed development. This project is being undertaken within the Hunter Wetlands National Park to rehabilitate and provide additional habitat for migratory shorebirds which has been lost since the draining of the wetland areas in the 1970's. Prior to this time, the areas adjacent to the proposed development site were known to be one of the most important nocturnal roost sites for migratory shorebirds in the internationally significant lower Hunter estuary.

The Tomago Wetland Rehabilitation Project seeks to re-instate a suitable tidal regime to allow habitat for shorebirds (e.g. saltmarsh) to be established. In 2006, approval was given to the installation of automated floodgates along the north-south drain (located in downstream receiving waters of the proposed development site). In regular surveys being conducted by the Hunter Bird Observers Club on behalf of OEH's National Parks and Wildlife Service a number of migratory shorebirds have been observed utilising recently flooded areas. This includes species such as Australian Spotted Crake, Bar-tailed Godwits, Black-fronted Dotterel, Black-winged Stilt, Common Greenshank, Eastern Curlew, Golden Plover, Latham's Snipe, Marsh Sandpiper, Red-kneed Dotterel and Sharp-tailed Sandpiper, as well as the endangered species Australasian Bittern and Curlew Sandpiper. As this rehabilitation project progresses it is expected that populations of migratory shorebirds will move into the locality, potentially within several hundred metres of the proposed development site.

For this reason it is recommended that DP&I ensure that the proponents seek the appropriate *Environment Protection and Biodiversity Act 1999* approvals through the Australian Government environment agency (the Department of Sustainability, Environment, Water, Population and Communities) to ensure that protected migratory shorebirds are adequately protected against any direct and indirect impacts. This should take into account impacts on known habitat and/or any proposed rehabilitation of suitable habitat on adjacent land, such as the Tomago Wetland Rehabilitation Project on Hunter Wetlands National Park. Furthermore, any approvals and/or final reports consider appropriate flood modelling that ensures current flooding regimes on adjacent conservation lands is maintained and that any indirect impacts on these lands are adequately considered and mitigated against, such as noise, light pollution and altered hydrology.

5. Provision of offsets / compensatory habitat

OEH acknowledges the EA's 'ecological assessment' report (Section 5.1Compensatory strategies) states that an offset package for the proposal is currently being developed. This will include on-site and off-site offsets. OEH confirms that the proponent and their ecological consultants (EcoBiological) have been liaising with OEH and have indicated a potential offset site located in the upper NSW North Coast bioregion. OEH understands that the proposed offset contains vegetation communities (including endangered ecological communities, such as Freshwater Wetlands, Swamp Oak floodplain forests and Swamp sclerophyll forests) that are commensurate or in better condition than those on site.

OEH understands that the impact assessment on threatened species, ecological communities and their habitat on the development footprint and the proposed offset area has utilised the 'BioBanking Assessment Methodology' (BBAM) (DECC 2008) 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 EP&A Act and it provides a quantitative appraisal of what would be an acceptable offset package to compensate the likely impacts of the modification. As the BBAM will be used OEH's 2011 '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) can apply. This policy allows for modification to the BBAM under limited circumstances. OEH supports the use of this policy in determining a suitable offset package. At this stage no quantitative details (i.e. credit requirements) of the proposed offset package have been provided to OEH.

OEH supports the concept of an offset package being provided and the utilisation of the BBAM in determining the quantitative requirements (i.e. credit and/or spatial requirements of habitat/vegetation types), but requests its specific details regarding location and biodiversity values be provided so that OEH can assess that the BBAM and associated policy have been correctly applied, and that it represents a suitable offset to compensate the loss of habitat on the development site. OEH requests the following information on the proposed offset package:

- submission credit calculator files as outlined in Attachment B
- all appropriate BioBanking assessment files (including all reports, associated maps, field sheets etc), and any relevant expert reports (if applicable). Attachment B is a checklist of information required when utilising the draft Biobanking Assessment Methodology and can be used as a guide to the relevant information required
- all appropriate GIS shape files (e.g. maps, plots and transects, assessment circles, species polygons)
- geo-referenced map(s) showing the locality of the offset lands, relevant vegetation zones and management areas (if applicable)
- how the offsets will be conserved and managed in perpetuity (*refer to next paragraph).

6. Conservation in perpetuity of offset lands

The EA has not indicated how the proposed offset lands will be conserved and managed in perpetuity. OEH would expect these details to be included in any future offset package presented.

OEH would require that any offset proposed to be managed in perpetuity under an appropriate conservation mechanism, such as:

- the establishment of biobanking sites with biobanking agreements under the *Threatened Species Conservation Act 1995* (TSC Act)
- the dedication of land under the *National Parks and Wildlife Act 1974* (NPW Act).
- a Conservation Agreement under the NPW Act;
- a Trust Agreement under the *Nature Conservation Trust Act 2001*;
- a Planning Agreement under s 93F (soon to be s116T) of the *Environmental Planning and Assessment Act 1979*.

7. Management plan

Typically, OEH requires that an appropriate Management Plan (such as vegetation or habitat) be developed and implemented as a key amelioration measure, prior to any approvals, for both on- and off-site offset areas (including on-site habitat enhancement / management areas). OEH would expect that any such plan would be underpinned by an appropriate monitoring program and adaptive management regime to ensure ongoing success.

The management plan or outline there of, should clearly document how the offset area, any retained vegetated areas or habitat features and proposed habitat management within the development footprint (e.g. buffer zones, habitat trees and nest boxes) will be managed and implemented with respect to long-term conservation and viability, including clear details on how they will be funded. The plan / document should cover, but not be limited to, the following issues (where applicable):

- weed management (both control and suppression) and monitoring
- management of retained native vegetation and habitat (including buffer zones)
- feral animal control
- fire management (including asset protection zones (APZs)
- public access (including restriction of increased traffic and associated impacts, such as increased refuse and pets)
- size and management of buffer zones
- minimisation of edge effects and fragmentation
- stormwater control and changes to hydrology (including stormwater / runoff control and sediment / erosion control measures)
- management of specific habitat enhancement measures (e.g. hollow / habitat trees, animal fencing to facilitate movement, artificial hollows and nest boxes etc.)
- fauna displacement and if appropriate translocation (including any licence requirements)
- proposed surveys, such as pre-extraction baseline, pre-clearance and rehabilitation surveys
- details of long-term monitoring (including proposed timing)
- details of any rehabilitation program, including details of timing (including proposed staging details), rehabilitation measures (including details of proposed revegetation and species mix), and post-rehabilitation monitoring
- measures to ensure conservation in perpetuity (e.g. transfer to National Parks reserves, conservation agreements or covenants)
- funding details of long-term financial commitment to any proposed conservation measures, including any mechanisms to be implemented to achieve this.

OEH acknowledges that if the offset package utilises a biobanking agreement under the TSC Act or a Conservation Agreement under the NPW Act, then a management plan will be part of that process.

References

Aston, H.I. (1971) *Aquatic Plants of Australia*. Melbourne University Press.

Benson, D. and McDougall, L. (2002) Ecology of Sydney plant species - Part 9: Monocotyledon families Agavaceae to Juncaginaceae. *Cunninghamia*, 7**(4)**: 695-930.

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.

Harden, G.W. (ed.) (1990-2002) *Flora of New South Wales: Volumes 1-4*. New South Wales University Press, Kensington.

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.

ABORIGINAL CULTURAL HERITAGE

A review of the documentation, including Sections 3.13, 6.9, 7.10 and Appendix K entitled: 'Northbank Enterprise Hub, Tomago - LGA: Port Stephens – Aboriginal Heritage Impact Assessment' (dated July 2012) was undertaken by OEH to assess the potential impacts of the project on Aboriginal cultural heritage, in accordance with OEH's Aboriginal cultural heritage assessment guidelines and the requirements of Part 6 of the NPW Act.

1. Aboriginal cultural heritage assessments

OEH refers to the following reports commissioned by the proponent: 'An Archaeological Aboriginal Heritage Assessment of the Proposed Subdivision Tomago Road, Tomago' (dated December 2010), 'Northbank Enterprise Hub, Tomago - LGA: Port Stephens - Indigenous Archaeological Due Diligence Assessment' (dated December 2011) and 'Northbank Enterprise Hub, Tomago - LGA: Port Stephens – Aboriginal Heritage Impact Assessment' (dated July 2012).

OEH notes the existence of numerous registered Aboriginal sites in the immediate locality, acknowledges that the project area contains landforms which have yielded a significant volume of evidence of Aboriginal occupation (upper slopes and sand dunes) and notes that Aboriginal sites have been recorded in the project area by two separate archaeological consultants.

However, OEH also notes that there are some significant discrepancies in the reporting of this information by the proponent. This includes differences in the described landscape units located within the project area (December 2012 assessment: *upper slopes* and *river flats*; December 2011 assessment: *floodplain* only; and June 2012 re-assessment: *floodplain* and *low dune*), differences in the results of the field assessments (2010 assessment/survey: five sites and two potential archaeological deposits (PADS); 2011 assessment/survey: nil sites; and 2012 assessment/survey: two sites with associated PADs), concerns with the re-assessment of previously identified sites (previously identified in 2010 on: upper slopes (sand dunes) of the project area, described as containing remnants of dwellings, trees, slopes, sandy ridge and small terrace; and not on the river flats/floodplain), the differing views of the community participants provided during each assessment, and claims that the previously identified 2010 sites are not archaeological or cultural sites. These matters are concerning.

In order to progress/finalise these matters, it is recommended that the proponent meet with both consultant archaeologists to discuss the inconsistencies in the assessment and reporting of the Aboriginal cultural heritage values of the project area. The results of this meeting will endeavour to form a consensus view regarding the assessment processes undertaken and importantly the results of this assessment. A visit to the project area may also provide an opportunity to rectify/progress any outstanding matters. It is also recommended that evidence of this consultation is provided to DP&I in support of the proposal and is appended to the publically exhibited documentation.

2. Likely impact on Aboriginal cultural heritage values

OEH acknowledges that the proposed development is likely to impact on Aboriginal cultural heritage values of the project area, in particular the Aboriginal sites identified in the 2010 and 2012 assessments located in lower slopes and sand dunes in the northern portion of the project area. There is also a possibility that currently undetected cultural material may be present within the project area in those areas where Aboriginal objects have not been previously identified. The results of the 2012 assessment also predict there is moderate potential for in-situ archaeological sites within the dune in the north of the investigation area.

Accordingly, the proponent will be required to manage the likely and potential impact on Aboriginal objects in compliance with the requirements of the EP&A Act, the NPW Act and in consultation with the registered Aboriginal parties (RAPs) for the project.

3. Management of Aboriginal cultural heritage values

OEH refers to the recommendations provided in Section 6.9 of the EA and Section 10 of the 2012 Aboriginal Heritage Impact Assessment. It is noted that the proponent has committed to: involving the RAPs in the ongoing management of the project areas Aboriginal cultural heritage values, developing an Aboriginal Heritage Management Plan for the project, and conducting a cultural awareness program for all for the induction of all personnel and contractors involved in the construction activities on site. OEH supports these measures and has recommended conditions of approval below to address these matters.

However, OEH also notes the proponent proposes to seek an Aboriginal Heritage Impact Permit in accordance with the provisions of the NPW Act from OEH if Aboriginal objects are likely to be harmed by the development. OEH notes that in accordance with the requirements of Section 115ZG of the EP&A Act, following approval of a major project application, authorisation from OEH for impacting Aboriginal objects is not required by the proponent.

The EA has inadequately addressed this matter and Section 6.9 of the EA and Section 10 of the 2012 Aboriginal Heritage Impact Assessment details inappropriate management recommendations. OEH therefore recommends that the proponent provide additional legislatively appropriate management strategies developed in compliance with the EP&A Act and in consultation with the RAPs to address this matter. Evidence of this consultation should also be appended to the publicly exhibited documentation. Further, the recommendation by the RAPs for a monitoring program during the initial ground disturbance of the northern extent of the project area (upper slope/sand dune) should be considered as a component of this additional consultation.

4. Aboriginal Heritage Management Plan

OEH acknowledges the proponent's commitment to develop and implement an Aboriginal Heritage Management Plan (AHMP) for the project area in order to support the management of the potential impacts on Aboriginal cultural heritage. It is also acknowledged that the plan is to be developed in consultation with the RAPs parties for the project.

The AHMP must clearly demonstrate that effective community consultation with local Aboriginal communities has been undertaken in the development and implementation of the plan. OEH encourages the proponent to maintain continuous consultation processes with the community for the entire AHMP and for the life of the project for all Aboriginal cultural heritage matters associated with the project area. Evidence of consultation and views of the community for the AHMP should be included in its final iteration.

OEH also recommends that the AHMP includes procedures for ongoing Aboriginal consultation and involvement, management of all Aboriginal cultural heritage values associated with the project area, the responsibilities of all stakeholders, details of proposed mitigation and management strategies of all sites; including any additional investigation/survey processes, salvage activities, monitoring, management of impacted sites, etc; procedures for the identification and management of previously unrecorded sites (excluding human remains), details of an Aboriginal cultural heritage education program for all contractors and personnel associated with construction activities and compliance procedures in the unlikely event that non-compliance with the AHMP is identified.

5. Registration of Aboriginal sites

OEH acknowledges the results of additional field assessment of the project area and the identification of two Aboriginal sites located within the proposed development area, identified as '*TOM1*' with associated potential archaeological deposit (PAD) and '*TOM 2*' with associated PAD. A search of the Aboriginal Heritage Information Management System (AHIMS) revealed that these sites have not been registered with OEH. The proponent is advised to arrange for complete Aboriginal Site Recording Forms for each site to be submitted to OEH promptly for registration in AHIMS, as per the requirements of Section 89A of the NPW Act. The significance and any management outcomes for these sites must also be included in the

information provided to AHIMS. OEH notes that penalties now apply to corporations for failing to fulfil these requirements and this will be the final warning to the proponent.

AHIMS contact details: Phone: (02) 9585 6470, address: Level 6, 43 Bridge Street, Hurstville, NSW, 2220, e-mail: ahims@environment.nsw.gov.au.

Conclusion

Subject to the above issues being resolved by the proponent, OEH has no additional concerns with the Aboriginal cultural heritage assessment for the project application. OEH will provide conditions of approval for Aboriginal cultural heritage once other issues for the project have been resolved.

NATIONAL PARK ESTATE

The Tomago Wetland Rehabilitation Project, within the Hunter Wetlands National Park Ramsar listed area, relies on salt water inundation from the Hunter River to rehabilitate the estuarine/saltmarsh wetland environment. Any additional fresh water flows into the rehabilitation site has the potential to have adverse impacts on the project outcomes. Prolonged inundation from freshwater results in the loss or decline of the more succulent species of saltmarsh (such as *Sarcocornia* spp.), and as such may affect the condition and/or spatial extent of such communities.

During a discussion with OEH regarding issues related to the adjacent Westrac development and concerns by neighbours to increased water flows into neighbouring properties, A.W. Johnson (on behalf of the proponent) spoke of the intention to create a drainage system that flowed west into the Hunter River. The current EA does not refer to this intention.

OEH notes the following concerns based on the EA's Appendices:

1. Regional Flooding Assessment and Flooding and Drainage Assessment – Appendix F

- The report indicates modelling has been undertaken to determine the 1:100 year flood levels post-development (page 16), which includes all of the floodplain vegetation within the Tomago area of Hunter Wetlands which is being managed for wetland restoration. However, the report makes no reference to the extensive hydrologic modelling work that has been undertaken by the Water Research Laboratory of the University of New South Wales (Rayner & Glamore, 2011) which has been undertaken to support water management decisions to achieve saltmarsh regeneration within the Tomago wetlands.

2. Stormwater Assessment – Appendix G

- **Figure 6.6** - Shows flow diversion east from the Northbank Enterprise Hub site into proposed offset area adjacent to the north - south drain and the Hunter Wetlands National Park. OEH are concerned about the impact of any excess fresh water flows into the offset area from the subdivision and then continuing into the north south drain. The success of the Tomago Wetland Rehabilitation Project relies on maintaining a saline environment to create a saltmarsh environment. Any more fresh water flows into the north south drain would place the project at risk. It also shows fresh water diversion into the Port Waratah Coal site which has implications for the creation of an estuarine habitat.

- **Figure 6.6** does not show where flows will enter the Hunter River.

- **Figure 6.6** and **figure 8.1** are confusing. Figure 8.1 has drains running around the offset site while 6.6 shows only bio- filtration swales.

- **Page 34**, paragraph 3 – is unclear both in intent and location, where is the downstream area, bunded area, adjacent wetlands and floodgates the report is referring to?

- **Page 35**- paragraph 1 appears to place the responsibility on OEH and the PWC to manage the increased frequency and volume of runoff that would occur from the development site, this is a concern.

- **Page 37**- paragraph 2 states; *For these periods, only the smallest of rainfall days would result in runoff being completely retained within the bio-filtration measures….* The implication of this is that runoff will go into wetlands at any time outside from the smallest of rainfall days, this is a concern.

- **Page 37** paragraph 3 - states that ; *it is expected that more frequent and increased flows during the low flow periods will provide some benefit to improve the resilience of the existing aquatic environments.* The required aquatic environment for the Tomago Wetland Rehabilitation Project and the PWC projects are an estuarine environment not a freshwater aquatic environment, this is a concern.

More generally OEH notes the following with respect to stormwater assessment:

- It is unclear about the location of the bunded area (page 34) which as indicated, has the capacity to retain 100ML of water before the bund is breached. It is unclear to me how much water will be transferred via the flow diversion structures into the downstream wetlands after the 100ML capacity has been reached. (The bunded is referred to in Appendix F – Flooding and Drainage Assessment, however the exact location is unclear, particularly as the maps have been prepared with the now 'compensatory wetland area' being developed.)

- No assessment has been made as to what affect the discharge water will have on the vegetation. What will the vegetation change to? We are attempting to create a saline environment; will the amount of freshwater leaving the north hub site affect the salinity of the water being introduced via the north-south drain? Why has the Rayner and Glamore not been consulted?

- The Surface Water Monitoring plan indicates a flow monitoring site will be installed within Channel 4, however, similar structures should be installed at the other discharge sites to enable water management at all locations where water will be discharged into adjoining wetlands.

3. Development Plans – Appendix C

The Development Plans do not appear to contain connecting access from Tomago Road through the Northbank Enterprise Hub site onto the ring drain levee road so that access can be maintained into the Hunter Wetlands National Park.

OEH requests that the above issues regarding stormwater management and site access with respect to the adjoining Hunter Wetlands National Park be appropriately addressed.

References

Rayner, D.S. and Glamore, W.C. (2011) *Tidal Inundation and Wetland Restoration of Tomago Wetland: Hydrodynamic Modelling.* The University of New South Wales, School of Civil and Environmental Engineering, Water Research Laboratory

ATTACHMENT B:

CHECKLIST OF INFORMATION REQUIRED WHEN UTILISING THE BIOBANKING ASSESSMENT METHODOLOGY & SUBMITTING THE BIOBANKING ASSESSMENT TO OFFICE OF ENVIRONMENT AND HERITAGE (OEH) USING THE BIOBANKING CREDIT CALCULATOR VERSION 2.0

The *Assessors' Guide to Using the BioBanking Credit Calculator v.2* has been finalised and it is now available for download from the Office of Environment and Heritage website. The guide provides information on the operation and use of the web-based BioBanking Credit Calculator v2.0.

To summit your assessment to OEH, open your assessment in *Edit* mode, navigate to the *Assessment details* page and select the *Submit* button in the top right hand corner. A *Submit the assessment for approval* box will appear (Figure 1), where you can confirm submission (*OK* button) or cancel submission (*Cancel* button). Once a case has been submitted to OEH, the status of the case will change in your *My work* tab from *Work in progress (WIP)* to *submitted*. Please note that you cannot make any edits to an assessment that has been submitted, although you will be able to view the assessment.

Figure 1: Menu box in the BioBanking Credit calculator v. 2 that enables an assessment to be submitted to OEH.

The following documentation must be submitted with your Environmental Impact Statement or Environmental Assessment report (in hard copy and soft copy):

- BioBanking Assessment Report including a list of dominant indigenous species for overstorey, mid-storey and ground cover for each vegetation type and, where required:
  - local benchmark data;
  - request for increase in gain of site value;
  - a description of the proposed development;
  - measures to avoid and mitigate the impacts of development;
  - an assessment of indirect impacts;
  - a statement of on-site measures;
  - a description of the application of the BioBanking Assessment Methodology, including details of and assumptions made in utilising the methodology, such as (but not limited to) placement of assessment circles, remnant value, connectivity and reasoning behind selection of vegetation types in the Biometric Vegetation Type database;
  - plot and transect values including a list of the indigenous plant species identified in each of the plots; and
  - a description of targeted threatened flora and fauna surveys, and any general baseline surveys (incl. vegetation specific surveys). These should be also be provided schematically.

  and

  Where required, the BioBanking Assessment Report should also include:
  - expert reports;
  - an application for a determination on red flag areas;
  - more appropriate use of local data for vegetation types, benchmarks or threatened species;
  - environmental contributions accompanied by a BioBanking Agreement Credit Report (if applicable); and
  - an application for deferred retirement arrangements (if applicable).

- Copies of completed field data sheets, and updated with correct plant taxonomy in instances where field names have been used.

- Maps (soft copy as A4 jpgs) of:

- offset site / BioBanking Agreement boundary or development footprint;
- vegetation zones;
- management zones;
- and where required:
    - existing waste;
    - existing erosion; and
    - existing structures (in waterways)

- Separate shape files should be supplied for all the maps mentioned above plus:
    - plots and transects;
    - assessment circles;
    - species polygons;
    - polygons for adjacent remnant area; and
    - the location or habitat area of sensitive species, and the management area related to that sensitive species (as this information cannot be displayed publicly).

All maps must include:

- a title (as per the names above);
- the site's name, location and lot/Deposited Plan (DP) numbers;
- the scale;
- the date it was prepared; and
- a legend.

Boundaries and zones must be confirmed on the site using a GPS. This information should be digitised onto an ortho-rectified aerial photo or SPOT-5 image. Maps must be easily readable and submitted to OEH as a Geographic Information System (GIS) file that is ESRI compatible. Shape files must use GDA94 datum. Name each shape file as: 'biobank site name_descriptor'. For example, 'Hill Farm_photo points' or 'Hill Farm_management zones'.

Photo points should be named A, B, C, D, E, F, G, etc. Photo points should be located in areas where change is expected, i.e. where replanting, natural regeneration, intensive weeding or other active management actions are to be carried out. As a rough guide, include at least one photo point in each management zone where active management actions will be undertaken. Boundaries and zones must be confirmed on the site using a GPS. This information should be digitised onto an ortho-rectified aerial photo or SPOT-5 image. Maps must be easily readable and submitted to OEH as a Geographic Information System (GIS) file that is ESRI compatible.

Shape files must use GDA94 datum. Name each shape file as: 'biobank/development site name_descriptor'. For example, 'Hill Farm_photo points' or 'Hill Farm_management zones'.

Additional requirements for offset sites that may be required (based on liaison with OEH):

- completed biobanking agreement management action template (provided in Word format), and
- Biodiversity Credits Pricing Spreadsheet.

Once the case has been received OEH will review the data entered, and any supporting documentation. For State Significant Development (SSD), State Significant Infrastructure and residual Part 3A (under the *Environmental Planning and Assessment Act 1979*) this review will take place during the assessment of the Environmental Impact Statement or Environmental Assessment report (for Part 3A matters).