

Prepared by:



EPBC DRAFT PUBLIC ENVIRONMENT REPORT

Location:

Catherine Hill Bay/Gwandalan

Owner:

Rose Property Group



7 Canberra Street, Charlestown NSW 2290
PO Box 179 Charlestown DX12610 Charlestown
Tel: (02) 4943 6111 Fax: (02) 4943 5955
www.asquithdewitt.com.au

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Section 1

Introduction

The Catherine Hill Bay and Gwandalan Concept Plan is a controlled action under the EPBC Act and is subject to assessment under the Bilateral Agreement between the Commonwealth and NSW governments.

Under the Bilateral Agreement the matters specified in Schedule 4 of the EPBC Act must be addressed. The matters are addressed as a draft public environment report and environmental impact statement.

The Catherine Hill Bay and Gwandalan Concept Plan and Environmental Assessment form the environmental impact statement.

Attached to this report is an EPBC Protected Matters Report. This report identifies and demonstrates:

- The range of EPBC threatened species potentially affected by the action;
- No RAMSAR wetlands will be affected by the action;
- No effects on listed migratory species are likely;
- No effects on the Commonwealth marine environment are likely; and
- No effects on world heritage properties are likely.
- No effects on national heritage places are likely
- Additionally no nuclear actions are involved.

This report has been prepared in accordance with the NSW DoP Commonwealth Environment Protection and Biodiversity Conservation Act Guidelines, May 2007. The information provided meets the requirements specified in the Guidelines and Schedule 4 of the EPBC Regulation.

The format of the following report follows the outline prescribed in Schedule 4 of the EPBC Act. To this structure a conclusion has been added that addresses matters identified in the Commonwealth EPBC Guidelines.

Section 2

General Information

2.1 BACKGROUND OF THE ACTION

2.1.1 *The title of the action;*

Catherine Hill Bay Gwandalan Concept Plan

2.1.2 *The full name and postal address of the designated proponent*

Bryan Rose

Rose Property Group

51 Riley St

Woolloomoolo

2.1.3 *A clear outline of the objective of the action;*

The objective of the action is to permit residential subdivision and development.

2.1.4 *The location of the action;*

The location of the action is described in the Concept Plan and Environmental Assessment.

2.1.5 *The background to the development of the action*

The land is subject to a Memorandum of Understanding between the land owners and the NSW Government that provides for development and conservation outcomes.

2.1.6 *How the action relates to any other actions (of which the proponent should reasonably be aware) that have been, or are being, taken or that have been approved in the region affected by the action*

The action is not known to relate to any other action or proposed action.

2.1.7 *The current status of the action*

The action is in the approval stage.

2.1.8 The consequences of not proceeding with the action

Not proceeding with the action will compromise regional strategic planning development and outcomes.

Section 3

Description

A description of the action, including:

3.1 The components of the action

- Site preparation works including any necessary remediation.
- Civil construction of roads and urban service infrastructure including parks, opening space and bushfire asset protection zones.
- Staged construction of housing.
- The action will affect or potentially affect a number of vulnerable species listed under the EPBC Act, see 2(g)(ii) and attached EPBC Protected Matters Report.

3.2 The location of works to be undertaken

The location of the works is described in detail in the Catherine Hill Bay and Gwandalan Concept Plan;

3.3 How the works are to be undertaken

The works are described in overview in the Concept Plan and Concept Plan Environmental Assessment and described in detail in the Project Applications for individual works components and their accompanying Environmental Assessments;

3.4 The relevant impacts of the action including the effect on listed EPBC species

The impacts are addressed in the Concept Plan Environmental Assessment Report. The action involves a loss of 28 hectares of bushland. There is an agreed environmental offset for bushland and threatened species loss consisting of public dedication of some 310 hectares of land. The most relevant impact is the loss of threatened species habitat;

3.5 Proposed safeguards and mitigation measures to deal with relevant impacts of the action

The impacts of the action on EPBC threatened species are addressed through environmental offsets;

3.6 *Requirements for approval and conditions will be specified as part of any approval received for the Concept Plan.*

The proponent will be bound by the conditions of approval that are likely to reflect the Statement of Commitments provided as part of the approval documentation

See Appendix A of the Concept Plan Environmental Assessment.

3.7 *Feasible Alternatives*

The proposal is based on agreed and linked planning development and conservation outcomes via a Memorandum of Understanding (MoU).

The MoU is one of a number of similar documents that provides for broad scale regional outcomes under the Lower Hunter Regional Strategy, the Lower Hunter Conservation Strategy and the Draft Control Coast Regional Strategy. MoU's have been negotiated with a range of landowners to provide for regional outcomes.

No Action Alternatives

(i) The no action alternative

While protecting some smaller areas of threatened species habitat the no action alternative would compromise the achievement of regional conservation goals and regional development goals.

Securing the required conservation outcomes is linked via the MoU to development of the site in the proposed areas. The no action alternatives have potentially significant negative consequences.

(ii) Comparative description of the impacts of each alternative

There are potentially 3 options:

- No action, or
- The outcome foreshadowed by the MoU i.e. development of some 58 ha of land, or
- Partial MoU development with no bushland loss.

Options comparison table

Impact	No Action	Full MoU implementation	Partial MoU Implementation
		58 ha of development	30 ha of development
Bushland loss	Nil	Approx 28 ha loss	Nil
Threatened Loss of Species Habitat	Nil	Approx 18 ha loss	Nil
Housing Provision	Nil	Approx 815 dwellings	Approx 400 dwellings
Economic Benefits	Nil	Investment \$390m with 2500 jobs	Approx \$195m investment and 1250 jobs
Public Access Benefits	Nil	Lake and Coastal foreshore returned to public ownership	Potential loss of foreshore dedication
Conservation Management Gains	Nil	310 ha including threatened species habitat be included National Park	155 ha dedication

Preferred Alternatives

- (iii) The preferred option is development in accordance with the MoU option as the benefits identified in the above table demonstrates.

The development will occur over what is a mostly degraded former mining land with remnant habitat.

The minor conservation gain being 28 ha of bushland is a relatively poor return to the broader community when the potential economic, public access, policy and broad scale conservation outcomes to which full development of the proposal would contribute are taken into account. The full MoU option is consistent with the full achievement of regional, conservation and development goals as contained in the Lower Hunter Regional Strategy.

3.8 *Any consultation about the action*

(i) Any consultation that has already taken place.

The NSW Minister for the Environment is a party to the MoU and its outcomes. The action has already been extensively exhibited via the original concept plan and the referral of the site under the EPBC Act.

(ii) Further consultation

The action will be further consulted on via exhibition of the revised concept plan and the draft public environmental report. The public and NSW Authorities will have the opportunity for further comment.

(iii) Response to prior consultation

The matter was referred under the EPBC Act and found to be a controlled action.

The Bilateral Agreement applies and the matter is assessed under Part 3A of the EPA Act by the NSW Minister of Planning.

(iv) Identification of affected parties including any affected communities and their views.

No community will be directly affected by loss of bushland on privately owned land. The resulting population increase will have some manageable effects on existing communities.

Some sections of the broader community are opposed to the action. The opposition is based on a large range of matters not necessarily including the effects on threatened species.

Section 4

Relevant Impacts

4.1 DESCRIPTION OF THE RELEVANT IMPACTS OF THE ACTION.

A large range of species listed under the EPBC Act have been identified as potentially using the site. See attached EPBC Protected Matters Report.

The Ecological Assessment Report 2007 narrowed the list of threatened species listed under the EPBC Act potentially affected by the action to:

- Swift Parrot (*Lathamus dicolor*)
- Regent Honeyeater (*Xanthomyza phrygia*)
- Grey-headed Flying Fox (*Pteropus poliocephalus*)
- *Tetratheca juncea*
- *Cryptostylis hunteriana*
- *Diuris praecox*

A summary of the occurrence of these species is presented in Table 1 below.

Table 1: Threatened species habitat within development lands

Species	CHB/Moonee	Gwandalan
Swift Parrot	Suitable foraging habitat within vegetated areas	Suitable foraging habitat within vegetated areas
Regent Honeyeater	Suitable foraging habitat within vegetated areas	Suitable foraging habitat within vegetated areas
Grey-headed Flying Fox	Suitable foraging habitat within vegetated areas	Suitable foraging habitat within vegetated areas
<i>Tetratheca juncea</i>	Recorded	Recorded

Species	CHB/Moonee	Gwandalan
<i>Cryptostylis hunteriana</i>	Recorded	Suitable habitat present Not found during targeted surveys
<i>Diuris praecox</i>	Suitable habitat present Not found during targeted surveys	Suitable habitat present Not found during targeted surveys

Swift Parrot, Regent Honeyeater and Grey-headed Flying Fox

Foraging habitat for the Swift Parrot, Regent Honeyeater and Grey-headed Flying Fox exists within the vegetation at CHB development lands and Gwandalan development lands. A key foraging resource is *Eucalyptus robusta* within drainage lines within the Gwandalan development lands. No breeding habitat for these species occurs within or in close proximity to the development lands.

The portion of foraging habitat to be removed as a result of the proposal (CHB and Gwandalan development lands) is a small portion of the habitat available within the entire site (including offset lands). Furthermore, potential habitats within the offset lands would be dedicated to conservation as estates managed by DECC. Additionally, landscaping with endemic species (such as *Eucalyptus robusta*) would provide some foraging opportunities within the development estates for these species.

Tetratheca juncea

Whilst 369 *T. juncea* clumps would be removed as a result of the proposal within Gwandalan and CHB development lands, a large population would be conserved within the offset lands. Additionally, much larger populations are currently conserved within Wallarah National Park to the north of the site (over 9,900 individuals) and further populations located by RPS HSO (2007) within Coal & Allied lands at Gwandalan and Nords Wharf area which would be conserved in conservation reserves the number conserved is likely to increase. Thus, in the Wallarah Peninsula the total number of *T. juncea* totals over 49,000. Of these over 30,000 are to be conserved in conservation reserves. Such a large number of known plants protected in several disjunct but proximate conservation areas bodes well for the long term security of the species within the locality. Therefore, as the large numbers of *T. juncea* and the majority of the habitat will be conserved, it is considered unlikely that any impact will be significant in regards to the long term viability of the Wallarah population.

Cryptostylis hunteriana

Cryptostylis hunteriana was identified within the northern portion of CHB development lands (Hamlet 6). Five patches containing 13 aboveground stems were identified. This orchid appears naturally rare, and difficult to locate with only seven populations being recorded within the Lake Macquarie and Wyong Local Government Areas. The population within CHB development lands is significant locally, regionally, and at both a State and Federal level, due to the low numbers of this species recorded. Very few of these populations are reserved within defined conservation reserves.

If the entire population and the surrounding habitat are retained within the CHB development layout and appropriate management of the site is undertaken it is considered unlikely that the development would have a significant impact upon this species.

The loss of suitable *C. hunteriana* habitat within the Gwandalan development lands would represent an incremental loss of suitable habitat within the local area. However, the dedication of offset lands to conservation would conserve areas of suitable *C. hunteriana* habitat.

Diuris praecox

Diuris praecox was not recorded within the CHB or Gwandalan development lands despite targeted surveys and the presence of suitable habitat. The proposal would represent an incremental loss of suitable *D. praecox* habitat within the local area. However, a large portion of suitable *D. praecox* habitat exists within the offset lands that would be dedicated to conservation as estates managed by NSW National Parks. Due to the proposed conservation of a large portion of *D. praecox* habitat within the offset lands, the proposed development at CHB and Gwandalan is not considered likely to have a significant impact on the species.

4.2 (B) & (C) SHORT AND LONG TERM IMPACTS

Short term impacts arising from the proposal includes the loss of bushland, which provides habitat to a variety of flora and fauna species (including known *Tetratheca juncea* habitat, potential *Cryptostylis hunteriana* (providing conservation of the population within CHB development lands occurs) and *Diuris praecox* habitat and foraging habitat for Swift Parrot, Regent Honeyeater and Grey-headed Flying Fox) and erosion and sedimentation impacts during construction. The loss of bushland would be largely irreversible; however, landscaping with endemic species would provide some habitat for flora and fauna within the development lands. Potential erosion and sedimentation impacts on downstream areas during construction would be managed through appropriate measures developed through contractor construction environmental management plans.

Potential medium to long term impacts resulting from residential development, such as weed proliferation and predation increases from domestic pets, would be managed through the development and implementation of relevant management plans and the encouragement of responsible pet ownership.

Positive long term impacts from the proposal are likely to be the conservation outcomes resulting from the dedication of 310 hectares of offset lands to conservation.

4.3 SIGNIFICANCE OF RELEVANT IMPACTS

The short-term impacts, while irreversible, are unlikely to be significant because of the proposed offsets dedication and mitigation measures described in Section 5. The habitat loss is offset many times as the dedication lands contain a large area of similar habitat, which will come under the management of NSW National Parks.

The medium to long term effects are unlikely to be significant as they are largely predictable and manageable through the development of appropriate management plans.

The long-term effect of offset lands dedication is likely to be highly significant for conservation. Although the effects are not predictable, mainly due to extended time frames and the operations and variations of natural systems, the management of land for conservation will allow these systems to function in a regionally managed and thus more sustainable context.

4.4 DATA USED TO ASSESS IMPACTS

The effects on threatened species have been assessed on the basis of a range of surveys carried out between 2003 and 2007. More information on these surveys can be found in the Concept Plan Environmental Assessment and Appendices and Section 7 of this report.

Section 5

Proposed Safeguards and Mitigation Measures

5.1 THE PROPOSED MITIGATION MEASURES

Some 310 hectares of offset lands are proposed to be dedicated to conservation. While some of this area is remediated mining land, including the Wallarah Colliery site and a reject storage area, the majority is good to high quality bushland in a reasonably intact ecological condition.

Since the dedicated land will be managed by NSW National Parks and contains representations of most vegetation communities that occur within the development lands, the mitigation is likely to be highly effective.

In addition to the provision of offsets to be dedicated to conservation, the following mitigation measures would be adopted to ensure that the ecological impact of the proposal is minimised as far as possible:

- Rosegroup Pty Ltd commits to protect and conserve the species within the CHB development lands, for at least four years. During this time no construction would commence within or in close proximity to the species and the habitat in which it was recorded.
 - During this four year period, it is proposed to investigate the extent and occurrence of the local population within the offset lands to allow the significance of this population to be reassessed. It is proposed that detailed targeted surveys for the species within the offset lands would be undertaken during the appropriate season and may involve multiple surveys. Subsequent to further detailed investigations into the occurrence of *C. hunteriana* within the offset lands and in the case that a large population is found within the offset lands, alternative strategies may be proposed in close consultation with DECC, such as translocation.
 - It is anticipated that this would be a process that would involve ongoing consultation with DECC to ensure that appropriate conservation objectives, as per the MoU, are achieved.
- Whilst the Littoral Rainforest Endangered Ecological Community (TSC Act-listed only) identified within the CHB development lands was considered to be significantly degraded by weeds by EcoBiological, the extent of the community may actually be less than the area of 3.9ha given by EcoBiological since this figure included surrounding scrub. As such, further survey and analysis should be undertaken to map the

exact extent of the community within the CHB development lands and to provide a more detailed flora survey.

- Whilst searches were conducted for the evidence of owl activity within potential Masked Owl (TSC Act-listed only) roosts within Gwandalan development lands, further investigation of breeding activity is required. Targeted Masked Owl surveys within the Gwandalan development lands would be undertaken prior to any vegetation removal and should include stagwatching of potential roosts, spotlighting and call playback.
 - In the case that Masked Owl (TSC Act-listed only) breeding is recorded within the Gwandalan development lands the following recommendations apply:
 - Vegetation removal should not commence until young have fledged. This may require ongoing monitoring by experienced ecologists. Once the nest is no longer being used, vegetation clearance should occur within the next 3 months to prevent nesting re-occurring.
- The high concentrations of Glossy Black-Cockatoo (TSC Act-listed only) chewed cones observed within Gwandalan development lands in August 2007 and the high abundance of potential nesting hollows may indicate that the species may breed within the Gwandalan development lands. Targeted searches for Glossy Black-Cockatoo nesting sites within the Gwandalan development lands would be undertaken during the appropriate season (March to August) prior to vegetation removal (ie during March - August in the same year as vegetation removal is proposed). Multiple visits would be required during this survey period to assess whether the species breeds within the site.
 - In the case that Glossy Black Cockatoo (TSC Act-listed only) is found to be breeding within the Gwandalan development lands:
 - Vegetation removal would not commence until young have fledged. This may require ongoing monitoring by experienced ecologists. Once the nest is no longer being used, vegetation clearance may occur. Vegetation removal would not occur within the breeding period (March-August)
- Strict management of stormwater runoff from both CHB and Gwandalan development lands would occur to minimise potential impacts on adjacent lowland areas.
- The following wetland buffers would be implemented at CHB development lands:
 - A primary riparian buffer of 50 m from wetland vegetation, where no land uses are permitted that significantly detract from the potential of the buffer to achieve the goal of wetland protection. This buffer would consist predominantly of existing fringing vegetation.
 - Where these buffers are unable to be implemented within the proposed development design, additional control measures would be investigated in consultation with experienced

wetland hydrologists and engineers to ensure that potential impacts on the wetlands adjacent to the CHB development lands are minimised.

- A weed management and monitoring plan for the CHB development lands would be developed and implemented to minimise the potential for the invasion of aquatic and terrestrial weed species into vegetation remaining within the development lands and into adjacent areas. The weed management and monitoring plan for CHB development lands would be developed in consultation with NSW DECC to ensure consistency with management strategies undertaken for the adjacent Munmorah SCA and offset lands which would be transferred to DECC.
- The management of the development and conservation land interface is critical to ensure that no direct or indirect impacts occur in the short and long term on dedicated offset lands. As such, appropriate management plans would be prepared and implemented within the CHB and Gwandalan development lands in consultation with NSW DECC to ensure consistency of management strategies with adjacent offset lands.
- The minimum amount of clearing would take place as a general objective of the project, particularly within those areas that currently contain identified native vegetation communities.
- A *Tetratheca juncea* management plan would be prepared for the CHB and Gwandalan development lands to ensure the conservation and long term survival of this threatened species within the retained areas of the development estate. The *T. juncea* management plan for the CHB and Gwandalan development lands would be developed in consultation with DECC to ensure consistency with management strategies undertaken for adjacent offset lands (which would be transferred to DECC).
- Mature and / or hollow-bearing trees would be retained wherever feasible and with regards to public safety within the development framework, particularly within Gwandalan development lands where there are no offsets immediately adjacent to the site.
- Pre-clearing inspections would be undertaken by an ecologist in wooded areas where threatened fauna species have been recorded or are considered likely to occur. No breeding attempts would be disrupted during the course of the project, particularly by threatened fauna.
- During the construction phase, for any tree removal within forested areas, and in particular where hollow-bearing trees may be removed, all works would be supervised by an ecologist to recover any native fauna that are potentially displaced. Furthermore, where such risks occur, site-specific ecological advice would be sought to minimise impacts during the entire process. A clearing protocol would be adopted for the removal of trees containing suitable habitat hollows as follows (this is considered as a guideline, variations on the methods employed may be required to accommodate site specific factors):
 - All hollow bearing trees are to be flagged by an ecologist prior to the commencement of works on site.

- Underscrubbing of the entire site should be carried out by a 4x4 tractor with a slashing deck, this will minimise the establishment of degradation processes and leave a layer of mulch to aid in soil retention in the event of adverse weather. At this time felling of non habitat trees can take place, however a matrix of trees *must* be maintained to allow animal movement into the designated refuge area.
- After a period of two weeks, clearing of habitat trees should commence. Clearing must be carried out moving from the fringe of the matrix towards the refuge area. Trees should be 'soft felled' and inspected immediately by an ecologist for displaced fauna. All trees must be left for a minimum of two nights prior to being moved to a stockpile, to allow resident fauna to vacate tree hollows.

Note: Clearing would ideally take place outside of the main breeding seasons of resident fauna, preferably during late Autumn and Winter.

- Species selection for future landscaping works and seed stock for revegetation should be limited to locally occurring native species to maintain local genetic diversity. This should include *Eucalyptus robusta* and other regionally significant species.
- Appropriate vegetation, habitat and bushfire management plans would be included under an overarching Environmental Management Plan for the Gwandalan and CHB development lands.
- Where possible, earthworks (and certainly all works in the vicinity of drainage lines) would be undertaken during appropriate (i.e. dry) weather conditions. This will ensure that any potential erosion events will be intercepted and that no downstream impacts occur within any of the drainage lines. This will help to maintain existing habitat characteristics for native fauna in those areas, including those for threatened species.
- Nutrient and sediment control devices should be erected pre-clearing and post-construction works in sensitive areas where degradation processes may be triggered such as areas adjacent to watercourses until suitable rehabilitation has occurred to maintain surface integrity. Furthermore, stockpiles should be subject to individual sediment and nutrient control devices.
- Where possible, sediment retention ponds would be landscaped with fringing wetland vegetation to provide habitat for species such as Green and Golden Bell Frog.

5.2 STATUTORY OR POLICY BASIS FOR THE MITIGATION MEASURE

The 310 hectare dedication of offset lands to conservation is consistent with the Lower Hunter Conservation Strategy and the MoU to which the NSW Ministers for Planning and Environment are signatories.

5.3 COST OF THE MITIGATION MEASURES

The cost of mitigation measures implemented would be borne by a combination of the landholder, contractors and developers.

The 310 hectare dedication of offsets to conservation will involve no public expense. Costs will be borne by the landowner. Ongoing management costs of offsets will depend on the efforts of the NSW National Parks and Wildlife Services.

5.4 CONTINUING MANAGEMENT

The CHB and Gwandalan development lands would be managed as per the requirements of management plans which would be developed to manage threatened species and biodiversity within the development estates.

Ongoing management of the offset area will be by NSW National Parks. It is expected that the dedication areas will become part of the Munmorah State Conservation Area, which has a primary management objective of biodiversity conservation.

5.5 RESPONSIBLE AGENCY

Initial responsibility for ensuring the dedication of offset lands will be with the NSW Department of Planning. Responsibility of offset lands will likely pass to the NSW National Parks and Wildlife Service.

5.6 LIST OF MITIGATION MEASURES

- Dedication of 310 hectares of offset lands
- Conservation of *Cryptostylis hunteriana* population and surrounding habitat for a minimum of four years, permanently if no suitable offset measures can be identified
- Surveys for Masked Owl (TSC Act-listed only) breeding activity prior to vegetation removal
- Surveys for Glossy Black Cockatoo (TSC Act-listed only) breeding activity during March-August prior to vegetation removal
- Stormwater management
- Implementation of wetland buffers adjacent to CHB development lands

- Development and implementation of an overall Environmental Management Plan for the CHB and Gwandalan development lands which would include:
 - Weed management and monitoring plan
 - *Tetratheca juncea* management plan
 - *Cryptostylis hunteriana* management plan
- Policy of hollow-bearing tree retention where possible with regards to feasibility and public safety
- Pre-clearing surveys within suitable habitat for threatened fauna species (mainly state-listed species)
- Development of a tree-clearing protocol
- Landscaping with endemic flora species and landscaping of sediment retention ponds
- Earthworks undertaken during appropriate weather conditions
- Erosion and sediment control devices erected in sensitive areas pre-clearing and post-construction

Section 6

Other Approvals

6.1 THE ACTION IS SUBJECT TO APPROVAL UNDER PART 3A OF THE NSW EPA ACT 1979.

- (i) Assessment of the action is being carried out via the Concept Plan provisions of Part 3A which requires the preparation of an Environmental Assessment Report to the specification provided in “Director Generals Requirements”.

The applicable DGR’s require environmental assessment reports under the EPBC Act.

- (ii) Part 3A provides for management of impacts by applying legally enforceable conditions of approval. Under Part 3A proponents must prepare a draft Statement of Commitments that is binding on the action and its proponents.

6.2 (B) & (C) OTHER APPROVALS

No other approvals have been sought or granted in respect of the proposed action.

6.3 MONITORING ENFORCEMENT AND REVIEW PROCEDURES

The action will be subject to monitoring, enforcement and review procedures including management plan recommendations and approval conditions.

Monitoring and review procedures applied by the NSW Department of Planning as conditions of approval will be enforceable under the NSW EPA Act.

Section 7

Environmental record of person proposing to take the action

6.01 & 6.02 The proponent Rose Property Group and its constituent companies have not been subject to proceedings on the basis of protection of the environment or the conservation and use of natural resources.

Planning & Environment Policy

Rose has no formal policies in this regard but is committed to quality development. The effect of this commitment is high levels of compliance with planning, environment and development approvals.

Section 8

Information sources

This report is based on a series of flora and fauna assessments undertaken over the land on which the action is proposed.

8.1 (A) & (B) SOURCE AND CURRENCY OF INFORMATION

The studies are detailed in Section 2.5 of the Concept Plan EA.

The studies are:

- CHB Washery Site 2004
- Moonee Colliery Site 2003
- Moonee Colliery Site 2005-2006
- Crangan Bay Site 2003
- Snake and Possum Gully Site 2004
- Gwandalan Ecological Constraints 2003
- CHB MoU area ecological constraints 2006
- Gwandalan Orchid Survey 2007
- Ecological Assessment Report 2007

8.2 (C) HOW THE RELIABILITY OF THE INFORMATION WAS TESTED

Studies have been conducted since 2003, with an Ecological Assessment Report undertaken in 2007 which reviewed existing studies and undertook further targeted surveys and habitat assessment to fill any information gaps.

Targeted surveys for threatened species listed under EPBC Act considered likely to occur were undertaken within the development lands during appropriate seasons and conditions. Where the likelihood of detection of threatened species was reduced due to seasonality or the cryptic nature of the species (ie orchids) an assessment of the suitability of habitat for the

species was made in addition. This was the case for *Diuris praecox* for which targeted surveys were undertaken within the development lands and although the species was not recorded its presence could not be totally discounted due to its cryptic nature. Similarly, whilst suitable *Cryptostylis hunteriana* habitat exists within the Gwandalan site, the species was not detected during targeted surveys. The potential impact of the development on threatened species recorded or considered likely to occur within the development lands was assessed within the Ecological Assessment Report 2007.

8.3 (D) UNCERTAINTIES IN THE INFORMATION

The studies and surveys were conducted in accordance with the guidelines for this work that apply in the Lake Macquarie and Wyong LGA's.

Detailed ecological investigations have been undertaken within the CHB development lands (Wildthing, EcoBiological and RPS HSO) and within Gwandalan development lands (Wildthing and RPS HSO). In addition, assessments of likelihood of occurrence were undertaken based on the findings of surveys, suitability of the habitats present and the presence of local records. An assessment of significance of potential impacts of the proposal on threatened species recorded or considered likely to occur within the development lands was undertaken.

Whilst detailed surveys were not completed over the whole of the dedication/offsets area, broad-scale vegetation mapping, *Tetratheca juncea* occurrence and habitat assessment was undertaken across the offset lands. In addition, some large areas such as Crangan Bay were subject to detailed investigations by Wildthing.

Section 9

Summary and Conclusion

In summary, threatened species survey work has been conducted in accordance with appropriate standards, the information can be considered reliable and the proposed offsets represent a like-for-like match to the bushland and habitat loss arising from the action.

Given the extent of suitable foraging habitat for the Swift Parrot, Regent Honeyeater and Grey-headed Flying fox within the offset lands and the small amount of habitat loss resulting from the proposed action, it is not considered likely to have a significant impact through:

- Long term decrease in the size of an important population
- Reduction in area of an important population
- Fragment an existing important population
- Adversely affect critical habitat
- Disrupt the breeding cycle
- Reduce the availability of quality habitats
- Result in invasive species
- Introduce disease
- Interfere with the recovery of the species

It is considered that the approximate loss of *Tetratheca juncea* within the CHB and Gwandalan development lands does not represent the loss of an “important population” considering the large population sizes recorded within the offset lands and the entire Wallarah Peninsula (approximately 49,000 with 30,000 in or to be dedicated to conservation reserves). Given the improved conservation outcomes achieved with proposed dedication of the land to NPWS, the South East population will be more secure. Given the extent of local populations of *Tetratheca juncea* and the habitat loss relative to the proposed offset the action is not likely to have a significant impact through:

- Long term decrease in the size of an important population

- Reduction in area of an important population
- Fragment an existing important population
- Adversely affect critical habitat
- Disrupt the breeding cycle
- Reduce the availability of quality habitats
- Result in invasive species
- Introduce disease
- Interfere with the recovery of the species

Providing the protection of *Cryptostylis hunteriana* and surrounding habitat within the CHB development lands occurs, the action is not likely to have a significant impact through:

- Long term decrease in the size of an important population
- Reduction in area of an important population
- Fragment an existing important population
- Adversely affect critical habitat
- Disrupt the breeding cycle
- Reduce the availability of quality habitats
- Result in invasive species
- Introduce disease
- Interfere with the recovery of the species

In the case that further investigations reveal the presence of a much larger local *Cryptostylis hunteriana* population within the offsets, consultation with DECC would occur to investigate other alternatives.

The loss of potential *Diuris praecox* habitat within the CHB and Gwandalan development lands is considered to be a small portion of the potential habitat that exists within the offset lands. As such the action within CHB and Gwandalan development lands occurs, the action is not likely to have a significant impact through:

- Long term decrease in the size of an important population

- Reduction in area of an important population
- Fragment an existing important population
- Adversely affect critical habitat
- Disrupt the breeding cycle
- Reduce the availability of quality habitats
- Result in invasive species
- Introduce disease
- Interfere with the recovery of the species

The significance of the likely impacts in accordance with EPBC Act policy statement 1.1 is as follows.

9.1 SENSITIVITY OF THE IMPACTED ENVIRONMENT

Most of the CHB development lands have been highly disturbed from former mining use and are not considered to be particularly sensitive. However, surrounding bushland and wetlands adjacent to the development areas are in good condition and may be sensitive to disturbance.

The Gwandalan development lands have been disturbed by residential development, recreational facilities and grazing. However, some areas of high quality vegetation remain including a high number of hollow-bearing trees which are a key resource for many fauna species.

Large portions of the offset lands are more sensitive being relatively soundly vegetated and containing NSW endangered ecological communities.

9.2 TIMING DURATION AND FREQUENCY OF IMPACTS

The effect will be a one off loss of habitat and vegetation on the development areas but a permanent conservation gain through dedication of the proposed offset area of 310 ha.

9.3 ALL ON SITE AND OFFSITE IMPACTS

The on site impacts are loss of habitat.

Off site impacts could occur as a result of the overall decrease in threatened species habitat but have been assessed as unlikely to be significant. The impacts are unlikely to be significant when balanced against the local and regional conservation gains for the affected habitat types.

9.4 ALL DIRECT AND INDIRECT IMPACTS

The direct impacts associated with the proposed action are primarily associated with vegetation removal and subsequent loss of habitat for threatened flora and fauna species. However, the provision of 310 ha of offset lands to conservation will provide ongoing protection of threatened flora and fauna habitat for the region.

The potential indirect impacts associated with the proposed action include erosion and sediment impacts on downstream locations, water quality impacts arising from stormwater runoff, alteration in flow and hydrology due to residential development, increase in predation resulting from domestic pets and weed introduction and spread. The potential indirect impacts would be mitigated through the development and implementation of appropriate stormwater controls and management plans for the CHB and Gwandalan development lands.

9.5 TOTAL IMPACT OVER TIME OVER THE ENTIRE GEOGRAPHIC AREA AFFECTED

While direct effects are limited to the site indirect effects are linked to the regional conservation outcomes specified in the Lower Hunter Conservation Strategy. Generally the total impact over time and the region is expected to be positive given the gains of larger conservation areas and specific conservation management of the land in a regional context.

9.6 EXISTING LEVELS OF IMPACT FROM OTHER SOURCES

At present the Catherine Hill Bay land is a managed mine site in the process of closure. There are no significant levels of impact from other sources other than unauthorised site access. The Gwandalan land is affected by the current residential occupation with few outside impacts.

9.7 THE DEGREE OF CONFIDENCE WITH WHICH THE IMPACTS ARE KNOWN AND UNDERSTOOD

Whilst a high level of confidence is expected in regards to the potential direct and indirect impacts of the action, there is potential for unexpected impacts to arise as a result of the action. However, unexpected impacts are

considered to be highly unlikely and should they occur, they would be addressed in consultation with relevant authorities.