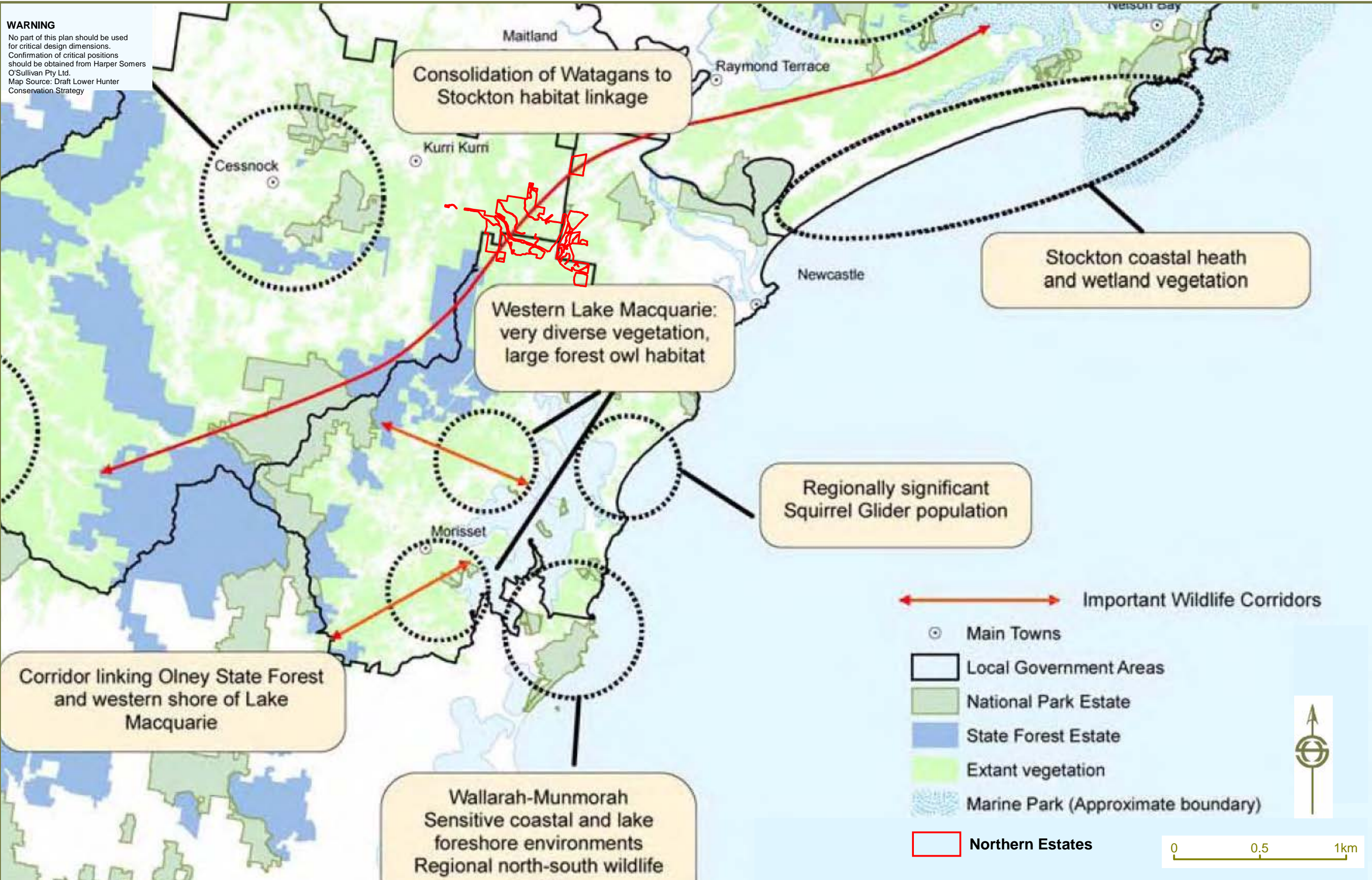


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Map Source: Draft Lower Hunter Conservation Strategy



**TITLE:** Figure 3 Regional Corridor  
(Draft Lower Hunter Conservation Plan)

**CLIENT:** Coal & Allied  
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**SCALE:** 1: 30000 at A3 Size  
**DRAWN:** A. McConville  
**APPROVED:** M. Doherty  
**DATUM:** MGA Zone 56 (GDA 94)  
**DATE:** 3/11/2008  
**LAYOUT REF:** J:\JOBS\24\24530 Hunter Valley\Drafting\Ecology\Northern Lands\ALL WORKSPACES\REPORTS\IEPBC Report\24530 FIGURE 4 Nth Lands Regional Corridors A-A3.wor  
**CONTOUR INTERVAL:** N/A  
**JOB REF:** 24530

**PLANNING SURVEYING ECOLOGY**



The Conservation Estates within the Northern and Southern Estates to be dedicated to the NSW Government will provide and enhance vitally important conservation corridors identified in the LHRs and Draft Regional Conservation Plan. The expansion, protection and management of corridors is a key focus of the LHRs and the companion Draft Regional Conservation Plan. Two major green corridors have been identified running through the region, namely the Watagan to Stockton Corridor and the Wallarah Peninsula Corridor. These are extensive corridors of land with high environmental value that will be managed for conservation purposes. The corridors align with existing public reserves, some of which will be expanded. Relevant to the Southern Estates, the Wallarah Peninsula Corridor is to be protected to provide a natural break between the Central Coast and the Lower Hunter.

Coal and Allied are dedicating 2247ha of the Stockrington Estate and 147ha of the Tank Paddock Estate and 17Ha of the Minmi-Link Road Development Estate to the NSW Government as 'Conservation Estates' to provide an important component of the Watagan to Stockton Corridor. The Coal and Allied land dedication will clearly help expand and enhance the biodiversity and conservation values of the Watagan to Stockton Conservation Corridor.

The substantial dedication of 3,375ha of land to conservation within both the Northern and Southern Estates to NSW Government by Coal and Allied will also ensure this land will be protected from inappropriate development by locking away this land as 'Conservation Estates' in public ownership. The environmental gain from the environmental land offset package is a once in a generation opportunity that will provide an enduring legacy for the community.

#### Part 3A Process Outline

Each of the Coal and Allied estates form an important part of an environmental land offset package for the Lower Hunter which spans four local government areas. Given the complexities of the environmental land offset package and in order for the NSW Government to effectively manage and achieve the land transfers, all of the Coal and Allied estates need to be considered in a coordinated manner as Major Projects under Part 3A of the *Environmental Planning and Assessment Act, 1979*.

On 30 November 2007, the NSW Minister for Planning agreed that the development proposal for each of the Northern Estates be considered as a Major Project under Part 3A of the *Environmental Planning and Assessment Act, 1979*. The Minister also agreed to consider the Northern Estates as potential State Significant Sites under Schedule 3 of the Major Project SEPP 2005.

Given the size and complexity of the proposal, the Minister for Planning also authorised submission of a Concept Plan for each of the Northern Estates. The Concept Plans will enable key site parameters associated with land use, infrastructure delivery and timing, and environmental conservation to be resolved up front, with subsequent detailed stages being submitted for approval progressively.

On 10 April 2008, the Department of Planning (DoP) issued final Director-General's Environmental Assessment Requirements (DGEAR's) for the sites for preparation of a Concept Plan and Project Application. The DGEAR's have been included as Attachment 2.

#### **3.5 Environmental impact assessments under Commonwealth, state or territory legislation**

As discussed, Part 3A of the *Environmental Planning and Assessment Act 1979* came into force on 1 August 2005. It established new assessment procedures for various form of 'major development' of state or regional significance. Given that the proposal is to be assessed pursuant to Part 3A assessment under the *Environmental Planning and Assessment Act 1979* an Environmental Impact Statement is not required under the *Environmental Planning and Assessment Act 1979*.

The scope of environmental assessment has been based on the environmental assessment requirements issued by the Director General of Planning in early April 2008, in accordance with section 75F of the *Environmental Planning and Assessment Act 1979*.

The DGEAR's issued for the two Northern Estates require an assessment of the impact of the development on threatened species and their habitats having regard to DECC's Threatened Species Assessment Guidelines and detailed measures proposed to avoid or mitigate impacts on threatened species and their habitat (Attachment 2).

The DGEAR's also require consideration of the environmental impacts of the proposal and any mitigation and monitoring measures required to address these impacts.

Coal & Allied has undertaken extensive community consultation for the northern estates of Minmi and Black Hill following the signing of the MOU between the company and the NSW State Government. A complete summary of the consultation and the outcomes from the community workshops is included at Attachment 4.

Following is a summary of this engagement.

1. Operation of a community information line (1800 551 560).
2. Maintaining a project website (via Coal & Allied website).
3. A public meeting at Minmi Town Hall on 14 November 2006.
4. A series of targeted stakeholder meetings including local councils, indigenous groups, progress associations and environmental groups.
5. Production and distribution of a brochure explaining Coal & Allied's history in the area, the relationship of Coal & Allied land to the Lower Hunter Regional Strategy, engagement opportunities and approach to sustainability.
6. Two community newsletters distributed in June 2007 and Feb 2008.
7. Newspaper advertising and media releases.
8. Community participation in a regional forum Aug 2007.
9. Community workshops in Minmi on 1 and 3 November 2007 to collate community values and identify needs for consideration during preparation of masterplans.
10. Community participation in a design charette Nov 2007.
11. Production of a brochure explaining the extensive conservation outcomes proposed for the project, Sept 2008.
12. Update to charette participants 11 Sept 2008 at Minmi town hall
13. The draft Concept Plans have been discussed with representatives of both Newcastle City Council and Lake Macquarie City Council.
14. The Department of Planning instigated the development of the Western Corridor Sub Regional Plan. Coal & Allied participated in workshops with the Department and other major land owners likely to be impacted by the outcomes of the Plan. A final Draft of the plan has not yet been advertised.

### 3.6 A staged development or component of a larger project

This referral relates to the entirety of the proposed development in the Development Estates of the Northern Estates within the areas delineated in Figures 1 and 2.

At the state level, the proposal is to be assessed pursuant to Part 3A assessment under the NSW *Environmental Planning and Assessment Act 1979*. To this end, on the 17 October 2006 the Minister for Planning, Minister for the Environment and Minister for Lands entered into a MOU with Coal and Allied Industries Ltd. The MoU detailed the development and conservation of Coal and Allied land holdings, collectively classified into 'Southern Estates' and 'Northern Estates'.

On the 30 November 2007 the NSW Minister of Planning agreed that the development proposal for the two Development Estates be considered as a Major Project under Part 3A of the Environmental Planning and *Environmental Planning and Assessment Act, 1979*. In early April 2008, the Director-General issued Environment Assessment Requirements authorising the preparation of a Concept Plan under Part 3A of the EP&A Act for each estate. A Concept Plan for each estate, including Environmental Assessment, are currently under preparation for each estate pursuant to the Director-General's Environmental Assessment Requirements. A project application will be lodged for the Minmi-Link Road Development Estate following completion and acceptance of the concept plan.

Two separate Part 3A applications under the *Environmental Planning and Assessment Act 1979* will be submitted for Black Hill and Minmi-Link Road; these actions have been addressed here together due to the close proximity of these estates to each other within north west Newcastle and the similar ecological values of the estates.

Development proposals for other surplus Coal and Allied land holdings in the Lower Hunter Region located at Catherine Hill Bay, Gwandalan and Nords Wharf (collectively referred to as the 'Southern Estates') have previously been investigated. However, while the Northern Estates are located within the same region as the Southern Estates, they are separated by almost 30km and have different ecological values. As a result, while both the proposed Northern and Southern Estates are the subject of the same MoU, only the Northern Estates are relevant to this referral. A separate EPBC Application has been submitted for the Southern Estates.

## 4 Affected environment

### 4.1 Matters of national environmental significance

#### 4.1 (a) World Heritage Properties

There are no World Heritage listed properties within the locality.

#### 4.1 (b) National Heritage Places

There are no National Heritage Places within the locality.

#### 4.1 (c) Wetlands of International Significance (Ramsar)

The following RAMSAR wetlands occur within the locality:

- Hunter Estuary Wetlands

#### 4.1 (d) Listed threatened species and ecological communities

Floristic investigations found no vegetation communities within the Northern Estates or its vicinity to be commensurate with Endangered Ecological Communities listed under the *EPBC Act 1999*.

Those nationally listed flora species known from the region that were recorded or have at least a moderate potential to occur within the Northern Estates (Attachment 3) are as follows:

• <i>Caladenia tessellata</i>	Tessellated Spider Orchid	Vulnerable
• <i>Cryptostylis hunteriana</i>	Leafless Tongue Orchid	Vulnerable
• <i>Diuris praecox</i>	Newcastle Doubletail	Vulnerable
• <i>Eucalyptus glaucina</i>	Slatey Red Gum	Vulnerable
• <i>Grevillea parviflora</i> ssp. <i>parviflora</i>	Small leaved Grevillea	Vulnerable
• <i>Rutidosia heterogama</i>	Heath Wrinklewort	Vulnerable
• <i>Tetradlea juncea</i>	Black-eyed Susan	Vulnerable

Those nationally listed fauna species considered that have at least a moderate potential to occur within the Northern Estates (Attachment 3) are as follows:

• <i>Lathamus discolor</i>	Swift Parrot	Endangered
• <i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Vulnerable
• <i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Vulnerable

One threatened flora species (*Tetradlea juncea*) and one threatened fauna species (*Pteropus poliocephalus*) listed under the *EPBC Act 1999* were located within the -Link Road Development Estate, during surveys (Figure 4). No threatened species listed under the *EPBC Act 1999* were recorded within the Black Hill Development Estate.

Targeted surveys for threatened flora species were undertaken within suitable habitat within the Minmi-Link Road and Black Hill Development Estates.

Refer to Figure 4 for the locations of threatened species recorded within the Northern Estates during surveys.

#### **Caladenia tessellata (Tessellated Spider Orchid) - Vulnerable**

*Caladenia tessellata* was not recorded, despite targeted surveys within the Development Estates. However, the cryptic nature of this orchid, combined with sporadic flowering makes it difficult to detect. Suitable habitat for this species exists within the Development Estates and as such it has been addressed here even though it was not recorded.

As a precautionary approach, areas of vegetation community types that have been known to support this cryptic orchid have been included in calculations of potential habitat within the Northern Estates. Potential habitats for *Caladenia tessellata* include dry sclerophyll forests such as Lower Hunter Spotted Gum-Ironbark Forest, Coastal Plains Smooth-barked Apple Woodland, Coastal Foothills Spotted Gum-Ironbark Forest and Hunter Valley Moist Forest (approximately 484.9ha). However, some of the vegetation communities contain sub-optimal micro-habitat and other factors such as aspect and topography would also influence the suitability of habitat for this cryptic orchid. As such, the potential habitat calculations given in Table 2 are likely to be an overestimate.

**Table 2: Amount of potential habitat for *Caladenia tessellata* within the Northern Estates**

Location	Area of suitable habitat
<i>DEVELOPMENT ESTATES</i>	
Black Hill	132.9ha
Minmi-Link Road	351.9ha
<b>TOTAL Development</b>	<b>484.9ha (19.4%)</b>
<i>CONSERVATION ESTATES</i>	
Stockrington and Tank Paddock	2016.9ha
<b>TOTAL Conservation</b>	<b>2016.9ha (80.6%)</b>

### ***Cryptostylis hunteriana* (Leafless Tongue Orchid) - Vulnerable**

The proposal would remove approximately 23.0ha of Coastal Plains Smooth-barked Apple Open Forest habitat within the Development Estate. Whilst this species has previously been located within this community at Freeman's Waterhole (Bell, 2004), this species habitat is generally woodland habitats and it occurs with other species of the same genus such as *Cryptostylis subulata* and *Cryptostylis erecta*. Neither of these other *Cryptostylis* species were recorded within the Minmi-Link Road Development Estate during flora surveys. Thus the habitat present within the Development Estate and Conservation Estates is considered to be sub-optimal. Targeted surveys have not been undertaken for this species within the Minmi-Link Road Development Estates during the flowering period of this species. These targeted surveys will be undertaken during the 2008 flowering period (end November/early December).

As a precautionary approach, areas of vegetation that have been known to support this cryptic orchid (Coastal Plains Smooth-barked Apple Open Forest) have been included in calculations of potential habitat within the Northern Estates. However, some of this area contains sub-optimal micro-habitat and other factors such as aspect and topography would also influence the suitability of habitat for this cryptic orchid. As such, the potential habitat calculations given in Table 4 are likely to be an overestimate.

**Table 3: Amount of potential habitat for *Cryptostylis hunteriana* within the Northern Estates**

Location	Area of suitable habitat
<i>DEVELOPMENT ESTATES</i>	
Black Hill	0
Minmi-Link Road	22.98ha
<b>TOTAL Development</b>	<b>22.98ha (8%)</b>
<i>CONSERVATION ESTATES</i>	
Stockrington and Tank Paddock	260.15ha
<b>TOTAL Conservation</b>	<b>260.15ha (92%)</b>

### ***Diuris praecox* (Newcastle Doubletail) - Vulnerable**

*Diuris praecox* was not recorded, despite targeted surveys within the Development Estates. However, the cryptic nature of this orchid, combined with sporadic flowering makes it difficult to

detect. Suitable habitat for this species exists within the Development Estates and as such it has been addressed here even though it was not recorded.

As a precautionary approach, areas of vegetation communities that have been known to support this cryptic orchid have been included in calculations of potential habitat within the Northern Estates. Potential habitats for *Diuris praecox* include dry sclerophyll forests such as Lower Hunter Spotted Gum-Ironbark Forest, Coastal Plains Smooth-barked Apple Woodland, Coastal Foothills Spotted Gum-Ironbark Forest and Hunter Valley Moist Forest (approximately 484.9ha). However, some of the vegetation communities contain sub-optimal micro-habitat and other factors such as aspect and topography would also influence the suitability of habitat for this cryptic orchid. As such, the potential habitat calculations given in Table 4 are likely to be an overestimate.

**Table 4: Amount of potential habitat for *Diuris praecox* within the Northern Estates**

Location	Area of suitable habitat
<i>DEVELOPMENT ESTATES</i>	
Black Hill	132.9ha
Minmi-Link Road	351.9ha
<b>TOTAL Development</b>	<b>484.9ha (19.4%)</b>
<i>CONSERVATION ESTATES</i>	
Stockrington and Tank Paddock	2016.9ha
<b>TOTAL Conservation</b>	<b>2016.9ha (80.6%)</b>

#### ***Eucalyptus glaucina* (Slatey Red Gum) - Vulnerable**

This species was not recorded during surveys within the Development Estates. However, potential habitat for this species occurs within the Hunter Lowland Redgum Forest within the Minmi-Link Road Development Estates and the Conservation Estates. Whilst a small amount of potential habitat (0.4ha) would be removed within the proposed Development Estates, the species was not recorded therein. Approximately 19.8ha of Hunter Lowland Redgum Forest representing potential habitat will be protected within the Conservation Estates. Table 6 summarises potential habitat within the Northern Estates.

**Table 5: Amount of potential habitat for *Eucalyptus glaucina* within the Northern Estates**

Location	Area of suitable habitat
<i>DEVELOPMENT ESTATES</i>	
Black Hill	0
Minmi-Link Road	0.4ha
<b>TOTAL Development</b>	<b>0.4ha (2.0%)</b>
<i>CONSERVATION ESTATES</i>	
Stockrington and Tank Paddock	19.8ha
<b>TOTAL Conservation</b>	<b>19.8ha (98.0%)</b>

#### ***Grevillea parviflora* subsp. *parviflora* (Small leaved Grevillea) - Vulnerable**

This species was not recorded during surveys within the Development Estates. However, potential habitat for this species occurs throughout the Lower Hunter Spotted Gum-Ironbark Forest, Coastal Plains Smooth-barked Apple Woodland, Coastal Foothills Spotted Gum-Ironbark Forest and Hunter Lowland Redgum Forest vegetation community within the Northern Estates. Table 6 summarises potential habitat within the Northern Estates.

**Table 6: Amount of potential habitat for *Grevillea parviflora* ssp. *parviflora* within the Northern Estates**

Location	Area of suitable habitat
<i>DEVELOPMENT ESTATES</i>	
Black Hill	132.9ha
Minmi-Link Road	330.1ha
<b>TOTAL Development</b>	<b>463ha (19.6%)</b>
<i>CONSERVATION ESTATES</i>	
Stockrington and Tank Paddock	1897.3ha
<b>TOTAL Conservation</b>	<b>1897.3ha (80.4%)</b>

***Rutidosia heterogama* (Heath Wrinklewort) - Vulnerable**

Whilst potential habitat would be removed within the proposed Development Estates (267.5ha), the species was not recorded therein. However, approximately 408.2ha (60%) of Lower Hunter Spotted Gum-Ironbark Forest representing potential habitat will be protected within the Conservation Estates. Table 6 summarises potential habitat within the Northern Estates.

**Table 7: Amount of potential habitat for *Rutidosia heterogama* within the Northern Estates**

Location	Area of suitable habitat
<i>DEVELOPMENT ESTATES</i>	
Black Hill	132.9ha
Minmi-Link Road	136.8ha
<b>TOTAL Development</b>	<b>269.7ha (39.5%)</b>
<i>CONSERVATION ESTATES</i>	
Stockrington and Tank Paddock	408.2ha
<b>TOTAL Conservation</b>	<b>408.2ha (60.5%)</b>

***Tetradlea juncea* (Black-eyed Susan) - Vulnerable**

A total of 10 *Tetradlea juncea* plant clumps were recorded within the Minmi-Link Road Development Estate during targeted surveys whilst over 352 clumps were recorded in the Stockrington Conservation Estate. Potential habitat occurs within the development and Conservation Estates in the Coastal Plains Smooth-Barked Apple Woodland vegetation community. Table 8 summarises the potential habitat affected by the proposal.

**Table 8: *Tetradlea juncea* plant clumps recorded within the Northern Estates**

Estate	Total in Development Estates (Plant Clumps)	Total in Conservation Estates* (Plant Clumps)	Total
Minmi-Link Road	10	-	<b>10</b>
Black Hill	0	-	<b>0</b>
<i>Total Plant Clumps in Northern Estates</i>	<i>10 (2.8%)</i>	<i>352 (97.2%)</i>	<b>362</b>

\*Only a small portion of the Conservation Estates were surveyed to the same intensity as the proposed Development Estates. As such, the number of *T. juncea* plant clumps recorded within the Conservation Estates is a **gross underestimate** of the actual population likely to exist within the Conservation Estates.

The development estates occurrence is a small population, and additional searches were undertaken in November 2007 to relocate these plants and possibly map further individuals but these plants could not be located again. At least 350 individual plant clumps have been identified within the Conservation Estates. Furthermore it is estimated that 185 ha of suitable habitat within the Conservation Estates remains to be surveyed. Thus, it is considered that the population within the Conservation Estates will be significantly larger in size than the population within the Development Estates.



The work of Payne (2000) states that all sub-populations of 100 plants or more are of very high conservation significance, however, at the time the whole population of *Tetradlea juncea* was estimated to be only 10,000. This figure is an underestimation of the entire population throughout its range, but due to the cryptic nature of this species and the lack of extensive surveys a conservative approach was taken. However, numerous surveys since this time have discovered numbers far in excess of this figure on individual holdings. Whilst the total number of specimens of the species has not been determined, it is clear that it is at least in the order of hundreds of thousands, if not more. Furthermore, all of the conservation goals outlined in Payne (2000) have been met and exceeded.

Some of the elements of the life-cycle of *Tetradlea juncea* have recently been discovered although much of the ecology is still unknown. However, as this species is an outcrosser (ie cannot self pollinate) and utilises buzz pollination (Gross *et al.*, 2003; Driscoll 2003) this type of reproduction leads to low fruit set. Buzz pollinators are highly specialized and require specific habitat requirements and this has been hypothesised as one of the reasons for the species decline and fragmentation (Gross *et al.*, 2003). Whilst the *Tetradlea juncea* population within the Minmi-Link Road Development Estate is small, the Coastal Plains Smooth-barked Apple Woodland contains other species which utilise buzz pollination (eg *Hibbertia* sp. and *Dianella* sp.) and this habitat may form an east-west corridor for the pollinator. The Conservation Estates provides good quality habitat for the buzz pollinator of *Tetradlea juncea* due to the presence of other species which utilise buzz pollination combined with large areas of good quality intact native vegetation. Thus, it is vital that conservation of good quality habitat for the pollinator is conserved to ensure sufficient seed is set to ensure the survival of this species. Whilst the populations within the Conservation Estates have not been quantified, there is far more potential habitat of Coastal Plains Smooth-barked Apple Woodland present within the Conservation Estates than the Development Estates.

#### ***Lathamus discolor* (Swift Parrot) - Endangered**

This species does not occur in the Lower Hunter Region on a continuous basis, as it only moves from Tasmania into South-eastern Australia during the winter months and migrates back to Tasmania in the summer, where the population breeds. Regional records for this species occur at western Lake Macquarie, Raymond Terrace, Maitland and widely within the Cessnock LGA. Regional habitat preferences for this species are for Swamp Sclerophyll forests containing *E. robusta*, Spotted Gum – Ironbark dominated vegetation communities, *E. tereticornis* occurrences across the Lower Hunter Region, and *E. tereticornis* on the lower drainage flats and lower lakeside slopes adjacent to Lake Macquarie and Port Stephens. The Development Estates contains large areas of Spotted Gum – Ironbark vegetation, which contains preferred foraging tree species for this species and due to its mobility it is likely to occur within the site on at least an intermittent basis. However, the lack of records in the vicinity of the Development Estate suggests that local movements do not occur on a regular basis. There are large areas of suitable potential habitat for this species within lands that are to be retained as Conservation Estates at Stockrington and Tank Paddock.

Winter-flowering foraging habitat for the species occurs within the Lower Hunter Spotted Gum-Ironbark Forest, Coastal Foothills Spotted Gum-Ironbark Forest, Hunter Lowland Redgum Forest and Swamp Mahogany-Paperbark Forest within both the development and Conservation Estates. Table 9 summarises the potential key foraging habitat to be removed and conserved as a result of the proposal.

**Table 9: Potential Swift Parrot foraging habitat within Northern Estates**

Location	Area of suitable habitat
<i>DEVELOPMENT ESTATES</i>	
Minmi-Link Road	132.9ha
Black Hill	307.4ha
<b>TOTAL Development</b>	<b>440.3ha (18.5%)</b>
<i>CONSERVATION ESTATES</i>	
Stockrington and Tank Paddock	1944.8ha
<b>TOTAL Conservation</b>	<b>1944.8ha (81.5%)</b>

***Pteropus poliocephalus* (Grey-headed Flying-fox) - Vulnerable**

This species was recorded within the Development Estates in Lower Hunter Spotted Gum Ironbark Forest, although there is no indication that there are roosting camps for this bat in the vicinity of the site. Potential foraging habitat for this species occurs widely across the Development Estate and bushland areas within the wider locality, which is not surprising in light of the mobility of this species. Whilst it is recognised that the species may utilise all vegetated habitats within the Northern Estates, habitats offering winter-flowering foraging resources such as *E. robusta* and *Corymbia maculata*, are likely to be important to the species. Notably a large established camp is located within Blackbutt Reserve, approximately 15km to the east of the Northern Estates. Individuals observed during surveys are likely to be members of this population.

Winter-flowering foraging habitat for the species occurs within the Lower Hunter Spotted Gum-Ironbark Forest, Coastal Foothills Spotted Gum-Ironbark Forest, Hunter Lowland Redgum Forest and Swamp Mahogany-Paperbark Forest within both the development and Conservation Estates. Table 10 summarises the potential key foraging habitat to be removed and conserved as a result of the proposal.

**Table 10: Important winter-flowering Grey-headed Flying Fox foraging habitat within Northern Estates**

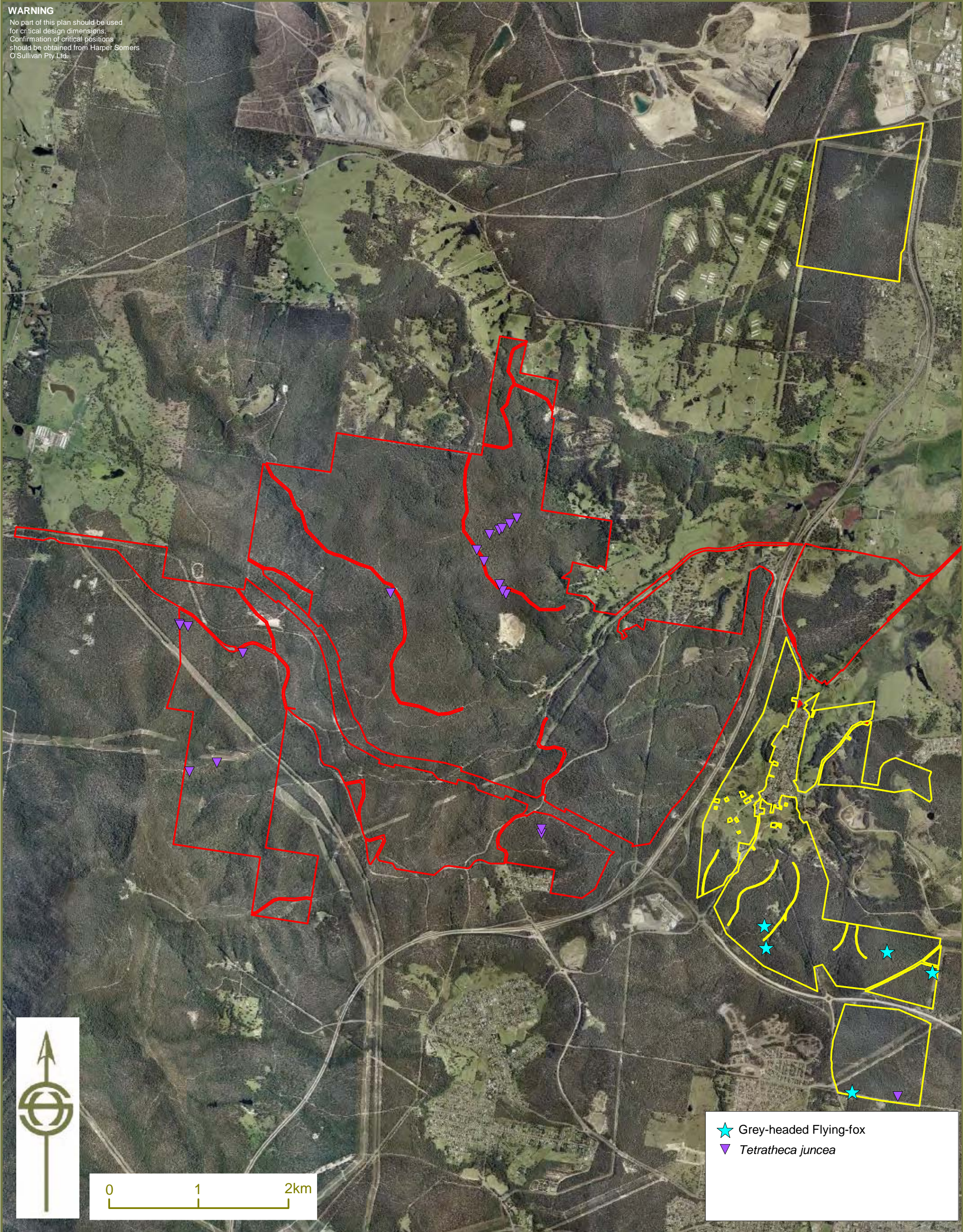
Location	Area of suitable habitat
<i>DEVELOPMENT ESTATES</i>	
Minmi-Link Road	132.9ha
Black Hill	307.4ha
<b>TOTAL Development</b>	<b>440.3ha (18.5%)</b>
<i>CONSERVATION ESTATES</i>	
Stockrington and Tank Paddock	1944.8ha
<b>TOTAL Conservation</b>	<b>1944.8ha (81.5%)</b>

***Chalinolobus dwyeri* (Large-eared Pied Bat)**

This species was not recorded within the Development Estate during fauna surveys although it has been previously recorded within the immediate vicinity of the site and its wider locality. Being a species that utilises a diverse range of open forest and woodland habitats for foraging, it is likely that the Development Estate lands may be used on at least an intermittent basis as part of its local foraging range. No potential cave-roosting habitat is known within the site, but potential roosting sites occur within the Sugarloaf Range to the southwest. Approximately 538.2ha (22.5%) of vegetation representing potential foraging habitat for the species will be modified within the Development Estates. However, approximately 1852.3ha (77.5%) of potential foraging habitat will be protected within the Conservation Estates. This estimation has included all vegetation communities recorded within the Northern Estates apart from the 'weeds and cleared areas' vegetation type and as such may be an over-estimation of the amount of foraging habitat actually present.



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- ★ Grey-headed Flying-fox
- ▼ *Tetratheca juncea*

TITLE: Figure 4 - EPBC Threatened Species Survey Results

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SCALE:	1: 38000 at A3 Size	DRAWN:	S. Corry	APPROVED:	M. Doherty
DATUM:	MGA Zone 56 (GDA 94)	DATE:			
LAYOUT REF:	J:\JOBS\24124530 Hunter Valley\Writing\Ecology\Northern Lands\ALL WORKSPACES\REPORTS\EPBC Report\24530-2 Figure 5 EPBC Threatened Species Survey A-A3	CONTOUR INTERVAL:	N/A	JOB REF:	24530-2



#### 4.1 (e) Listed migratory species

The following nationally listed Migratory species have been identified as having the potential to occur within the Northern Estates.

- |                                 |                           |
|---------------------------------|---------------------------|
| • <i>Haliaeetus leucogaster</i> | White-bellied Sea-Eagle   |
| • <i>Hirundapus caudacutus</i>  | White-throated Needletail |
| • <i>Merops ornatus</i>         | Rainbow Bee-eater         |
| • <i>Monarcha melanopsis</i>    | Black-faced Monarch       |
| • <i>Myiagra cyanoleuca</i>     | Satin Flycatcher          |
| • <i>Rhipidura rufifrons</i>    | Rufous Fantail            |
| • <i>Xanthomyza phrygia</i>     | Regent Honeyeater         |

##### ***Haliaeetus leucogaster* (White-bellied Sea-Eagle)**

The White-bellied Sea Eagle was not recorded during surveys within the Minmi-Link Road and Black Hill Estates. Whilst it is considered moderately likely that the White-bellied Sea Eagle would fly over the proposed Development Estates, no foraging (coastal and lake fringes) or breeding habitat for the species exists within the Development Estates.

##### ***Hirundapus caudacutus* (White-throated Needletail)**

The White-throated Needletail was not recorded during surveys; however, suitable aerial foraging habitat exists over the Northern Estates and it is likely that the species would occur occasionally. Whilst foraging habitat within the Development Estates would be modified as a result of the proposal, the White-throated Needletail forages at high altitudes and is considered able to continue foraging over cleared land. Additionally, the proportion of foraging habitat to be removed (approximately 21.3% of Northern Estates) as a result of the proposal is considered to be a small portion of the habitat to be protected within the proposed Conservation Estates (approximately 78.7% of Northern Estates). The species does not breed in Australia and as such no breeding habitat for the species would be removed as a result of the proposal.

##### ***Merops ornatus* (Rainbow Bee-eater)**

The Rainbow Bee-eater was not recorded within the Northern Estates during surveys; however, suitable foraging and breeding habitat exists within the Northern Estates and the species is considered likely to occur. Potential foraging and breeding habitat within the Development Estates would be modified as a result of the proposal. However, the proportion of foraging/breeding habitat to be removed (approximately 21.3% of Northern Estates) as a result of the proposal is considered to be a small portion of the habitat to be protected within the proposed Conservation Estates (approximately 78.7% of Northern Estates).

##### ***Monarcha melanopsis* (Black-faced Monarch)**

The Black-faced Monarch was recorded within the Minmi-Link Road and Black Hill Estates during surveys. Potential foraging and breeding habitat within gully areas within the Development Estates would be modified as a result of the proposal. However, the proportion of foraging/breeding habitat to be removed (22.3%) as a result of the proposal is considered to be a small portion of the habitat to be protected within the proposed Conservation Estates (approximately 77.7% of the Northern Estates). In addition, major drainage lines (potential habitat) are proposed to be retained within the development footprint – further bolstering areas of conserved habitat.

##### ***Myiagra cyanoleuca* (Satin Flycatcher)**

The Satin Flycatcher was not recorded within the Northern Estates during surveys; however, suitable foraging and breeding habitat exists within some gully areas within the Northern Estates. A small area of potential foraging and breeding habitat within the Development Estates would be modified as a result of the proposal. In addition, major drainage lines (potential habitat) are

proposed to be retained within the development footprint – further bolstering areas of conserved habitat.

#### ***Rhipidura rufifrons* (Rufous Fantail)**

The Rufous Fantail was recorded within both the Minmi-Link Road and Black Hill Development Estates during surveys. The species was also recorded within both the Stockrington and Tank Paddock Conservation Estates. However, the proportion of foraging/breeding habitat to be removed (22.3%) as a result of the proposal is considered to be a small portion of the habitat to be protected within the proposed Conservation Estates (approximately 77.7% of the Northern Estates).

#### ***Xanthomyza phrygia* (Regent Honeyeater)**

The Regent Honeyeater was not recorded within the Minmi-Link Road and Black Hill Estates during surveys. Most records of this species within the Lower Hunter are from lowland riparian habitats containing winter-flowering canopy trees. These habitat attributes do not occur within the site, hence the chance of occurrence is considered low. Winter-flowering habitat within the Development Estates occurs within vegetation assemblages containing *Corymbia maculata* (Spotted Gum) on ridgelines with riparian vegetation communities that are more suited to the species largely absent. Some significant areas of riparian habitat containing winter-flowering canopy trees in conjunction with ridgeline *Corymbia maculata* (Spotted Gum) is to be protected within Stockrington Conservation Estates under the current proposal.

#### **4.1 (f) Nuclear actions**

The proposal does not include any nuclear actions.

#### **4.1 (g) Commonwealth marine areas**

There are no Commonwealth Marine areas within or adjacent to the Northern Estates.

### **4.2 Important or unique aspects of the environment, if relevant**

#### **4.2 (a) Soil and vegetation characteristics**

There are three different categories of soils across the Northern Estates according to Soils Landscapes of the Newcastle region (Matthei 2005). The majority of the soil across the site is classified as Killingworth. This soil type is typical across the rolling hills around Minmi. This type of soil has low to very low fertility and high erosion potential. The topsoils of this classification are typically brownish black sand or silt loams and the subsoils are usually sand or silt clays.

A small area on the eastern side of Minmi-Link Road Development Estate closest to the Minmi and Fletcher area has two different soil types. These are the Beresfield and Bobs Farm classification.

The Beresfield soil type is typically low in fertility, highly acidic and has a high foundation hazard potential due to the shrink-swell nature of the subsoil. Black Hill Development Estate also exhibits Beresfield soil type.

The Bobs Farm classification is the soil type associated with the estuarine flats of the Tomago region. These soils generally have a high foundation hazard potential due to localised water logging and shrink-swell subsoils.

The majority of the Development Estate is underlain by the Newcastle Coal Measures of Permian Age and the northern section including the Tank Paddock Conservation Estate is underlain by the Tomago Coal Measures of Permian Age.

Vegetation is characterised by mainly open forests and woodlands dominated by Spotted Gum-Ironbark assemblages with more closed forests occurring within steep gullies and drainage lines.



#### **4.2 (b) Water flows, including rivers, creeks and impoundments**

Small low energy watersheds are a function of the generally low slope gradients and promote ephemeral creeks and drainage lines with swampy areas forming where level perched areas have trapped deep sediments or underlying clays prevent freely draining substrates.

#### **4.2 (c) Outstanding natural features, including caves**

The topography of Black Hill is characterised by low undulating hills and rises with limited outstanding features. The area surrounding the Link Road exhibits moderately steep flanks encompassing the water sheds of drainage lines flowing to the north and south respectively.

#### **4.2 (d) Gradient**

Gradients within the Northern Estates are low to moderate on the slopes, with steeper slopes occurring surrounding the Link Road. Much of the land, including Black Hill is characterised by gentle slopes leading to drainage lines.

#### **4.2 (e) Buildings or other infrastructure**

There are few buildings and no formal infrastructure within the Minmi-Link Road Development Estate apart from a series of ad hoc tracks. Within the northern section of the Black Hill Estate there is an existing Boral Asphalt plant that serves for bridge and road construction.

#### **4.2 (f) Marine areas**

No marine areas occur within or adjoining the site.

#### **4.2 (g) Kinds of fauna**

Fauna recorded within the Northern Estates varies with respect to vegetation quality, density and community form. A total of 123 fauna species were recorded within the Northern Estates during surveys including 81 bird, 24 mammal, 10 frog and 8 reptile species.

The composition of wet (Alluvial Tall Moist Forest) and dry (Lower Hunter Spotted Gum-Ironbark Forest) vegetation communities within the Northern Estates provide opportunities for a moderate diversity of common native fauna and a number of locally occurring threatened fauna species. The wooded areas of the Northern Estates provide potential foraging opportunities for a number of threatened fauna guilds. Eucalypt and other dominant trees flowering times have potential to provide foraging opportunities including nectar and associated insect prey for a diversity of species including birds, microchiropteran bats and arboreal mammals throughout the majority of the year.

Forests within the site are continuous with extensive bushland areas to the northwest and southwest. Lands are therefore easily accessible to those species that these extensive habitats support. The site represents both foraging and potential breeding opportunities for forest owls, although it is unlikely that it would support these species in isolation.

In terms of potential shelter availability, in the Minmi-Link Road Development Estate, most areas are characterised by trees of limited maturity, which limits the incidence of hollow-bearing trees and therefore the availability of shelter and roosting opportunities across the site.

There are abundant habitat opportunities within the site for common reptile and amphibian species, but the site is unlikely to provide specific habitat attributes required for those threatened herpetile species that occur within the region.

The Grey-headed Flying Fox (*Pteropus poliocephalus*) was the only fauna species listed as threatened under the *EPBC Act 1999* that was recorded within the Northern Estates. However, two other threatened fauna species listed under the *EPBC Act 1999* were considered at least moderately likely to occur within the Northern Estates due to the presence of suitable habitat.

#### **4.2 (h) Current state of the environment**

Native plant communities within the Northern Estates remain relatively intact and of good quality despite the crisscrossing of the area with a number of ad hoc tracks, which are promoted by an obvious high usage by motorcycle riders. Erosion is mostly limited to these tracks, with minor gully erosion occurring along some creeklines. It is likely that introduced fauna such as foxes and feral cats currently impact upon the fauna to some degree, particularly in areas that are on the fringes of residential development or have a disturbance history. Weeds are primarily limited to along track sides and within previously cleared and/or disturbed areas (such as in close proximity to existing dwellings).

#### **4.2 (i) Commonwealth Heritage Places and places on the Register of the National Estate**

No Commonwealth Heritage Places are located within the general Northern Estates locality.

Seven places that are listed on the Register of the National Estate occur within the general Northern Estates locality, being:

- Park NSW, a historical open space at Wallsend, approximately 2.5km to the east of the Minmi-Link Road Development Estate;
- Police Offices Including Stables, a historical building located at Wallsend, approximately 8km to the south east of the Black Hill Development Estate;
- Police Station and Watch house, located in Wallsend, approximately 2.5km to the east of Minmi-Link Road Development Estate;
- Wallsend Civic Precinct NSW located in Wallsend, approximately 2.5km to the east of Minmi-Link Road Development Estate
- Wallsend Courthouse NSW, located within Wallsend, approximately 2.5km to the east of the Minmi-Link Road Development Estate.
- Wallsend Post Office Including Original Stables NSW, located in Wallsend, approximately 2.5km to the east of Minmi-Link Road Development Estate.
- Hunter Estuary Wetlands, located within approximately 6km to the east of the Black Hill Development Estate.

No impact of note on these places listed on the Register of the National Estate is considered likely as a result of the proposal. These places are not relevant to the proposal since:

- no listed sites, or the proposal, are located on Commonwealth land; and
- the proposed action is not a Commonwealth action.

#### **4.2 (j) Known Indigenous heritage values**

It is noted that:

- the proposal is not located on Commonwealth land and will not impact Commonwealth land; and
- the proposed action is not a Commonwealth action.

#### **4.2 (k) Other important or unique values of the environment**

The Northern Estates makes up a large portion of continuous high quality vegetation that adjoins other large landholdings to the south and north of the Northern Lands estates. Pambalong Nature Reserve immediately adjoins the Stockrington Estate to the north whilst in the south it directly adjoins Heaton State Forest. Hexham Swamp Nature Reserve is located approximately 2.5km to the east of the Minmi-Link Road Development Estate. While the proposed Development Estates do not immediately adjoin any one of these existing reserves the formal protection of the Conservation Estates will consolidate and further protect the existing reserve areas and create linkages between vegetation from the Watagans to Port Stephens. The proposed dedication of the Stockrington and Tank Paddock Conservation Estates would maintain key habitat and regional corridors as identified in the LHRS.

#### **4.2 (l) Tenure of the action area (eg freehold, leasehold)**

Coal & Allied has freehold ownership of all land within the action area.

#### **4.2 (m) Existing land uses**

The majority of the Northern Estates consists of relatively intact native vegetation, often with a system of ad hoc tracks, and no current land use. The northern portion of the Minmi-Link Road Development Estate has been partially cleared for agricultural activities and is currently used for horse and cattle grazing. A smaller area within the Black Hill Estate is used as an Industrial area for a bitumen batching plant.

The Minmi-Link Road Development Estates consist of both partially cleared and intact native vegetation with no current land use; however, motorbike and 4WD tracks indicate that the general public uses the area for recreational and dumping purposes. Two major transmission easements traverse the Link Rd South land on a NE/SW axis extending across Link Rd heading North on the eastern extremity of the Link Rd North land. There are also a number of privately owned lots/houses to the immediate south of Minmi village which will be incorporated into the Concept Plan.

#### **4.2 (n) Proposed land uses**

The proposal involves the development of suitable sites for residential development at Minmi-Link Road and Industrial development at Black Hill. Land at Stockrington and Tank Paddock is proposed as Conservation Estate. The proposed Development Estate will create up to 3300 dwellings.

## **5 Nature and extent of likely impacts**

### **5.1 Likely impacts on matters of national environmental significance (NES)**

#### **5.1 (a) Likely impact on the world heritage values of a declared World Heritage property**

No declared world heritage properties will be impacted by the proposal.

#### **5.1 (b) Likely impact on the heritage values of a listed National Heritage place**

No national heritage places will be impacted by the proposal.

### 5.1 (c) Likely impact on the ecological character of a declared Ramsar wetland

The RAMSAR wetland, Hunter Estuary Wetland, will not be impacted upon by the proposal.

### 5.1 (d) Likely impact on the members of a listed threatened species or ecological community, or their habitat

A total of one threatened flora species and one threatened fauna species were recorded during surveys, with a further five threatened flora species and two threatened fauna species were considered at least moderately likely to occur within the Northern Development Estates. A discussion of the potential impacts of the proposed action for each species follows.

#### ***Caladenia tessellata* (Tessellated Spider Orchid) - Vulnerable**

The proposal would remove approximately 484.9ha of dry sclerophyll forest within the Minmi-Link Road (351.9ha) and Black Hill (132.9ha) Development Estates, which is considered potential habitat for *Caladenia tessellata*. However, potential habitat also exists within the Stockrington Conservation Estates (approximately 2016.9ha), which were not extensively surveyed for the species. Targeted surveys were undertaken for this species within the Minmi-Link Road and Black Hill Development Estates and the species was not recorded. However, this species is difficult to detect and as such a precautionary approach has been taken in including this species in this assessment.

Considering the cryptic nature of this species, it is not known whether any *C. tessellata* individuals would be removed as a result of the proposal. An incremental loss of 484.9ha of potential *C. tessellata* habitat in the locality would occur. Moreover, the proposal will result in the conservation 'in perpetuity' of 2016.9ha of potential habitat for this species.

Irrespective of the above, in the absence of definitive field data on the presence of the species within the Development Estates, which would require numerous return surveys across a number of years, the precautionary principle must be applied and it must be concluded that there will be a significant impact on the species under one or more of the significant impact criteria for a vulnerable species, as defined by the Significant Impact Guidelines (EPBC Act Policy Statement 1.1, May 2006).

#### ***Cryptostylis hunteriana* (Leafless Tongue Orchid)**

The proposal would remove approximately 23.0ha of Coastal Plains Smooth-barked Apple Woodland habitat within the Development Estate. Whilst this species has previously been located within this community at Freeman's Waterhole (Bell, 2004) this species habitat is generally woodland habitats and it occurs with other species of the same genus such as *Cryptostylis subulata* and *Cryptostylis erecta*. Neither of these other *Cryptostylis* species were recorded within the Minmi-Link Road Development Estate. Thus the habitat present within the Development Estate and Conservation Estates is considered to be sub-optimal. Targeted surveys have not been undertaken for this species within the Minmi-Link Road Development Estates during the flowering period of this species. These targeted surveys will be undertaken during the 2008 flowering period (end November – early December).

Considering the cryptic nature of this species, it is not known whether any *C. hunteriana* individuals would be removed as a result of the proposal. An incremental loss of 23.0ha of potential *C. hunteriana* habitat in the locality would occur. Moreover, the proposal will result in the conservation 'in perpetuity' of 260.2ha of potential habitat for this species.

Irrespective of the above, in the absence of definitive field data on the presence of the species within the Development Estates, which would require numerous return surveys across a number of years, the precautionary principle must be applied and it must be concluded that there will be a

significant impact on the species under one or more of the significant impact criteria for a vulnerable species, as defined by the Significant Impact Guidelines (EPBC Act Policy Statement 1.1, May 2006).

***Diurus praecox* (Newcastle Doubletail) – Vulnerable**

The proposal will remove approximately 424.78ha of Lower Hunter Spotted Gum Ironbark Forest vegetation within both the Minmi-Link Road and Black Hill Development Estates, which is considered potential habitat for *Diurus praecox*. However potential habitat also exists within Conservation Estates at Stockrington and Tank Paddock (approximately 408.5ha). Targeted surveys at Development Estates recorded no individuals.

A number of records of this species occur to the east of the Northern Estates, along the coast between Merewether and Tingira Heights. The species was not recorded within the Development Estates despite targeted surveys.

Notably, approximately 2016.9ha of potential habitat will be protected within the Stockrington and Tank Paddock Conservation Estates. However, approximately 484.9ha of potential habitat will be removed as part of the proposal within the Black Hill and Minmi-Link Road Development Estates, representing an incremental local loss of habitat in the locality.

Irrespective of the above, in the absence of definitive field data on the presence of the species within the Development Estates, which would require numerous return surveys across a number of years, the precautionary principle must be applied and it must be concluded that there will be a significant impact on the species under one or more of the significant impact criteria for a vulnerable species, as defined by the Significant Impact Guidelines (EPBC Act Policy Statement 1.1, May 2006).

***Eucalyptus glaucina* (Slatey Red Gum) Vulnerable**

Targeted searches for this species within the Black Hill and Minmi-Link Road Development Estates did not locate any individuals of this species. However, suitable habitat for the species exists within the Alluvial Tall Moist Forest of the Northern Estates.

An incremental loss of approximately 0.4ha of suitable habitat in the locality would occur as a result of the proposal. However, this species was not recorded during the survey period and approximately 19.8ha of suitable habitat will be protected within the Stockrington and Tank Paddock Conservation Estates.

Since the species was not recorded within the Development Estates during surveys it is considered unlikely to be impacted as a result of the proposal. The proposal would represent an incremental loss of only 0.4ha of potential *Eucalyptus glaucina* habitat in the locality. Therefore, the proposal is not considered likely to have a significant impact on the species, as defined by the Significant Impact Guidelines (EPBC Act Policy Statement 1.1, May 2006).

***Grevillea parviflora* subsp. *parviflora* (Small leaved Grevillea) - Vulnerable**

Targeted searches for this species within the Black Hill and Minmi-Link Road Development Estates did not locate any individuals of this species. However, suitable habitat for the species exists within the dry sclerophyll areas of the Northern Estates.

An incremental loss of approximately 463ha of suitable habitat in the locality would occur as a result of the proposal. However, this species was not recorded during the survey period and approximately 1897.3ha of suitable habitat will be protected within the Stockrington and Tank Paddock Conservation Estates.



Since the species was not recorded within the Development Estates during surveys it is considered unlikely to be impacted as a result of the proposal. Therefore, the proposal is not considered likely to have a significant impact on the species, as defined by the Significant Impact Guidelines (EPBC Act Policy Statement 1.1, May 2006).

***Rutidosia heterogama* (Heath Wrinklewort) – Vulnerable**

Targeted searches for this species within the Minmi-Link Road and Black Hill Development Estates did not locate any individuals of this species. However, suitable habitat for the species exists within the Lower Hunter Spotted Gum Ironbark Forest of the Northern Estates.

An incremental loss of approximately 267.5ha of suitable habitat in the locality would occur as a result of the proposal. However, this species was not recorded during the survey period and approximately 408.2ha of suitable habitat will be protected within the Stockrington and Tank Paddock Conservation Estates.

Since the species was not recorded within the Development Estates during surveys, the proposal is not considered likely to have a significant impact on the species, as defined by the Significant Impact Guidelines (EPBC Act Policy Statement 1.1, May 2006).

***Tetradlea juncea* (Black-eyed Susan) - Vulnerable**

A total of 10 *Tetradlea juncea* plant clumps were located during the targeted surveys in August 2007 within the Minmi-Link Road Development Estates (Figure 4 shows the distribution). At least 352 plant clumps have been identified within the Conservation Estates. Furthermore, it is estimated that 256 ha of habitat within the Conservation Estates remains to be surveyed. Thus, it is considered that the population within the Conservation Estates will be significantly larger in size than the population within the Development Estate.

Table 11 is a summary of the numbers of *Tetradlea juncea* plant clumps in the region and these numbers are an underestimation of the total amount within conservation reserves as each DECC Atlas of NSW Wildlife record has been assumed to be one specimen, which is not the case. These numbers are as such an underestimation of the population within the region, and are only useful from a species distribution viewpoint.

Buzz pollinators of the species are highly specialised and require specific habitat requirements and this has been hypothesised as one of the reasons for the species decline and fragmentation (Gross *et al.*, 2003). Thus, it is vital that conservation of good quality habitat for the pollinator is conserved to ensure sufficient seed is set to ensure the survival of this species. Whilst the population within the Conservation Estates have not been fully quantified, there is more potential habitat of Coastal Plains Smooth-barked Apple Woodland present within the Conservation Estates than the Development Estates.

The work of Payne (2000) states that all sub-populations of 100 plant clumps or more are of very high conservation significance, however, at the time of publication the whole population of *Tetradlea juncea* was estimated to be only 10,000. This figure is an underestimation of the entire population throughout its range, but due to the cryptic nature of this species and the lack of extensive surveys at the time, a conservative approach was taken. However, numerous surveys since this time have discovered numbers far in excess of this figure on individual holdings. Whilst the total number of specimens of the species has not been determined, it is clear that it is at least in the order of hundreds of thousands, if not more. All of the conservation goals outlined in Payne (2000) have been met and exceeded.

Whilst Payne (2000) classifies *T. juncea* into four populations centred around Lake Macquarie, the occurrence of additional records in the time since suggest that these populations are more likely to

function as a large Lake Macquarie meta-population exchange of genetic material. However, the extent of genetic exchange between populations and sub-populations in the meta-population is largely unknown.

The *T. juncea* within the Stockrington Conservation Estates is considered likely to constitute an 'important population' as defined by the Significant Impact Guidelines (EPBC Act Policy Statement 1.1, May 2006) since it is likely to function as a key source population for dispersal and be necessary to maintain genetic diversity of the species. The occurrence of *T. juncea* within the Minmi-Link Road Development Estates is not considered likely to form part of the same population as the Stockrington Conservation Estate, but is likely to function as a small sub-population. The Minmi-Link Road sub-population occurs between the known sub-population within Northlakes to the west and areas of potential habitat (Coastal Plains Smooth-barked Apple Woodland mapped by the Lower Hunter Central Coast Regional Environmental Management Strategy) with scattered records to the east. Due to the positioning of the Minmi-Link Road sub-population in the middle of two other sub-populations it is likely to form a 'stepping stone' for buzz pollinators and may be required to maintain further sub-populations to the east. The viability of sub-populations to the east is uncertain in the long-term due to existing vegetation fragmentation resulting from ongoing urban development.

The proposal is considered likely to have a significant impact as defined by the Significant Impact Guidelines (EPBC Act Policy Statement 1.1, May 2006) on *T. juncea*, a vulnerable species, since the proposal will reduce the area of occupancy of the Minmi-Link Road important sub-population and potentially disrupt the genetic flow between eastern *T. juncea* occurrences and Stockrington in the west through fragmentation.

**Table 11 Known distribution of *Tetratheca juncea* within the region and known Conservation Areas**

Source	Numbers of <i>Tetratheca juncea</i> plant clumps
Atlas of NSW Wildlife Records <sup>4</sup>	828
Awabakal Nature Reserve <sup>2</sup>	87
Coal & Allied Catherine Hill Bay Proposed Offset lands	7,596
Coal & Allied Gwandalan Proposed Offset lands	8,222
Coal & Allied Nords Wharf Proposed Offset lands	5,933
Coal & Allied Stockrington Proposed Offset lands	352
Glenrock Nature Reserve <sup>2,4</sup>	1220
Jillaby State Recreation Area <sup>4</sup>	1
Karuah Nature Reserve <sup>4</sup>	5
Lake Macquarie State Conservation Area <sup>2</sup>	29
Munmorah State Conservation Area <sup>2</sup>	296
Proposed Rosegroup Offset lands <sup>3</sup>	214
Tingira Heights Nature Reserve <sup>4</sup>	2
Wallarah National Park and Habitat Corridor at Murrays Beach <sup>1</sup>	9900
Wallaroo Nature Reserve <sup>4</sup>	1
<b>Total in region</b>	<b>34,686</b>
<b>Total in Conservation Areas</b>	<b>33,858</b>

<sup>1</sup> Data from Conacher Travers (2006)

<sup>2</sup> Data from Payne (2000)

<sup>3</sup> Data from RPSHSO (2007) and Wildthing (2003a)

<sup>4</sup> Atlas of NSW Wildlife Records

### ***Lathamus discolor* (Swift Parrot) - Endangered**

The Swift Parrot was not recorded within the Northern Estates during surveys; however, suitable foraging habitat does exist. Approximately 440.3ha of winter flowering foraging resources would be removed as a result of the proposal. However, this is considered to be a small portion of the

habitat available to the species in the local area and 1944.8 ha of vegetation containing winter flowering foraging resources such as *Eucalyptus robusta* and *Corymbia maculata* will be protected within the Conservation Estates.

Therefore, due to the relatively small portion of foraging habitat to be removed, the proposal is not considered likely to have a significant impact on the species, as defined by the Significant Impact Guidelines (EPBC Act Policy Statement 1.1, May 2006).

***Pteropus poliocephalus* (Grey-headed Flying-fox) - Vulnerable**

The Grey-headed Flying Fox was recorded across the Southern Estates, generally within Lower Hunter Spotted Gum-Ironbark Forest. Approximately 440.3ha of winter flowering foraging resources likely to be important to the Grey-headed Flying Fox would be removed as a result of the proposal. However, this is considered to be a small portion of the habitat available to the species in the local area and 1944.8ha of vegetation containing winter flowering foraging resources such as *Eucalyptus robusta* and *Corymbia maculata* will be protected within the Conservation Estates. Furthermore, no roost or camp sites were observed during the survey period or are known on the Coal and Allied Northern Estates.

Therefore, due to the small portion of foraging habitat to be removed, the proposal is not considered likely to have a significant impact on the species, as defined by the Significant Impact Guidelines (EPBC Act Policy Statement 1.1, May 2006).

**5.1 (e) Likely impact on the members of a listed migratory species or their habitat**

It is envisaged that no impact will occur on migratory species listed in section 4.1(e) above based on the following:

- The proposed Development Estate does not encompass significant or critical nesting or foraging habitat for any of these species; and
- The agreed development and conservation outcome will provide a much larger conserved area of high quality habitat for threatened species identified as potentially occurring within the Northern Estates.

**5.1 (f) Likely impact on the environment in part of the Commonwealth marine area**

No Commonwealth marine areas will be impacted by the proposal.

**5.2 Likely impacts for nuclear actions, actions affecting Commonwealth land or actions taken by the Commonwealth**

The proposal is not a Commonwealth action and will not affect Commonwealth land.

## 6 Measures to avoid or reduce impacts

The primary ameliorative measures to reduce the potential impacts of the proposed development within the Minmi-Link Road and Black Hill Development Estates on NES matters to be included into the concept designs are as follows:

The ameliorative measures include:

- Retention of major creek line vegetation within the Development Estates will conserve important riparian habitat (as a bushland reserve);
- Incorporation of east-west vegetated corridors within the southern Minmi-Link Road Development Estates;
- Incorporation of best practice urban design into the proposed Development Estates;
- Appropriate nutrient and sediment control throughout the development process in accordance with Water Sensitive Urban Design, to minimise potential indirect impacts on adjacent Conservation Estates and receiving waters; and
- The developments will be commenced and released in stages, thus direct impacts on subject fauna and their habitat will be staged, hence allowing faunal movement, over time, into refuge and finally conservation habitat.

Importantly, under the proposal a transfer of lands to the NSW Government for conservation will occur. These Conservation Estates are located immediately adjacent to the proposed Development Estates, and collectively with existing and other proposed Conservation Estates provide a robust conservation reserve system for the Watagan to Stockton corridor. As discussed for each threatened species listed under EPBC Act 1999, threatened species habitat within the Conservation Estates is high quality, representative, and in much larger quantities of that which will be removed.

## 7 Conclusion on the likelihood of significant impacts

NOTE: Under the EPBC Act, you must identify in the referral whether or not you believe significant impacts on the matters protected under the Act are likely. If you identify that significant impacts are likely, you must identify the relevant protected matters in section 7.2.

Do you THINK your proposed action is likely to have significant impacts?

<input type="checkbox"/>	No, complete section 7.1
<input checked="" type="checkbox"/>	Yes, complete Section 7.2

### 7.1 Proposed action is NOT LIKELY to have significant impacts

Key reasons

### 7.2 Proposed action is LIKELY to have significant impacts

Type 'x' in the box for the matter(s) of the EPBC Act that are impacted

#### Matters likely to be impacted

<input type="checkbox"/>	sections 12 and 15A (World Heritage)
<input type="checkbox"/>	sections 15B and 15C (National Heritage places)
<input type="checkbox"/>	sections 16 and 17B (Wetlands of international importance)
<input checked="" type="checkbox"/>	sections 18 and 18A (Listed threatened species and communities)
<input type="checkbox"/>	sections 20 and 20A (Listed migratory species)
<input type="checkbox"/>	sections 21 and 22A (Protection of the environment from nuclear actions)
<input type="checkbox"/>	sections 23 and 24A (Marine environment)
<input type="checkbox"/>	sections 26 and 27A (Protection of the environment from actions involving Commonwealth land)
<input type="checkbox"/>	section 28 (Protection of the environment from Commonwealth actions)

Key reasons

The proposal is considered likely to have a significant impact on *Caladeina tessellata*, *Diurus praecox* and *Tetratheca juncea*, which are listed as vulnerable under the *EPBC Act 1999*.



## 8 Assessment approach under the EPBC Act

NOTE: If a decision is made that a proposal needs approval under the Act, the Minister will also decide the assessment approach needed to satisfy the objectives of the Act. While the information you have provided in this referral will be taken into account in making this decision, the final decision rests with the Minister.

### Level of assessment

<b>X</b>	Bilateral Agreement applies
	Accredited assessment
	Assessment on referral information
	Preliminary information
	Public Environment Report
	Environmental Impact Statement
	Commission of Inquiry
	No comment/Not sure

### Key reasons

## 9 Environmental history of the responsible party

NOTE: The EPBC Act Regulations provide for the environmental history of the party proposing to take the action to be taken into account when deciding the assessment approach for actions that need approval under the Act.

		Yes	No
9.1	<p>Does the party taking the action have a satisfactory record of responsible environmental management.</p> <ul style="list-style-type: none"> <li>If Yes, provide details</li> </ul> <p>The party taking the action maintains a core objective throughout its works operations of responsible environmental management. All works specifically pertaining to the action will occur in accordance with the required construction and environmental management plans</p>	X	
9.2	<p>Is the party taking the action subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources?</p> <ul style="list-style-type: none"> <li>If Yes, provide details</li> </ul>		X
9.3	<p>For an action for which a person has applied for a permit under the EPBC Act, is the person making the application subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources?</p> <ul style="list-style-type: none"> <li>If Yes, provide details</li> </ul>		X
9.4	<p>If the party taking the action is a corporation, will the action be taken in accordance with the corporation's environmental policy and planning framework?</p> <ul style="list-style-type: none"> <li>If Yes, provide details of environmental policy and planning framework</li> </ul> <p>The action will be undertaken in accordance with stringent environmental management plans and regular monitoring will occur to ensure that activities are concurrent at all times. Further information can be found at:  <a href="http://www.coalandallied.com.au/ourapproach/386_land.asp">http://www.coalandallied.com.au/ourapproach/386_land.asp</a></p>	X	

# 10 Information sources and attachments

## 10.1 References

Conics (2008) Coal & Allied Northern Estates Concept Plan Principles for Minmi/Link Road

Conics (2008) Coal & Allied Northern Estates Concept Plan Principles for Black Hill

Conacher Travers (2004) *EPBC Referral for the Lake Sector Wallarah Peninsula NSW*.

Conacher Travers (2006) *EPBC Referral for the Coastal Sector Wallarah Peninsula NSW*.

Conacher Travers (2007) *EPBC Referral for the Northern Sector Wallarah Peninsula NSW*.

Department of Planning – Director General EA Requirements

Memorandum of Understanding (2006) available on <http://www.planning.nsw.gov.au/>

Payne R. J. (2000) *Lake Macquarie Tetratheca juncea Conservation Management Plan, Robert Payne Ecological Surveys and Management*. An unpublished Report Prepared for Lake Macquarie City Council.

RPS HSO (2007a) *Ecological Assessment Report for Southern Lands at Catherine Hill Bay, November 2007*, Coal and Allied Operations. available on <http://www.planning.nsw.gov.au/>

RPS HSO (2007b) *Ecological Assessment Report for Southern Lands at Gwandalan, November 2007*, Coal and Allied Operations. available on <http://www.planning.nsw.gov.au/>

RPS HSO (2007c) *Ecological Assessment Report for Southern Lands at Nords Wharf, November 2007*, Coal and Allied Operations. available on <http://www.planning.nsw.gov.au/>

RPS HSO (2007d) *Ecological Assessment Report for Southern Lake Macquarie Lands, December 2007*, Rosegroup Pty Ltd.

## 10.2 Reliability of information

Information relating to the occurrence and potential impacts on threatened species listed under EPBC Act 1999 was primarily sourced from Ecological Assessment undertaken by RPS HSO. These reports are current and were undertaken to meet both Federal and NSW State legislative requirements for threatened species assessment. In addition, habitat assessment has also been used to assess the likelihood of occurrence of threatened species within the Northern Estates.

Threatened species records obtained from the NSW NPWS Atlas of Wildlife have been used to provide background information on the occurrence of threatened species in the local area. These have been used to provide an indication of the types of species that may potentially occur within the Northern Estates. Whilst the accuracy and reliability of these records has not been tested by the author, the records are made available by the NSW NPWS with a note they should only be utilised as an indicative tool to inform ecological assessments at a desktop level. Furthermore, the accuracy is considered highly dependent on the methods used by environmental practitioners to gather and record the data.

### 10.3 Attachments

<b>You must attach</b>	figures, maps or aerial photographs showing the project locality (section 2)	<b>X</b>
	figures, maps or aerial photographs showing the location of the project in respect to any matters of national environmental significance or important features of the environments (section 4)	<b>X</b>
<b>If relevant, attach</b>	copies of any state or local government approvals and consent conditions (section 3.4)	<b>X</b>
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 3.5)	
	copies of any flora and fauna investigations and surveys (section 4)	
	technical reports relevant to the assessment of impacts on protected matters and that support the arguments and conclusions in the referral (section 4 and 5)	
	report(s) on any public consultations undertaken, including with Indigenous Stakeholders (section 4)	

# 11 Signatures and declarations

NOTE: Providing false or misleading information is an offence punishable on conviction by imprisonment and fine (Section 489, EPBC Act).

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## Project title

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- 11.1 **Party who prepared the referral** I declare that the information contained in this form is, to my knowledge, true and not misleading. I request that the person named in 11.3 below (if any) be designated as the proponent for the action.

Signature



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Date 12 November 2008

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Full name MATTHEW DOHERTY

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- 11.2 **Party who responsible for action** is I declare that the information contained in this form is, to my knowledge, true and not misleading.

Signature



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Date 12 November 2008

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Full name KEITH DEDDEN

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- 11.3 **Proponent (complete only if different from 11.2)** I, being the person nominated in Section 1.3 of this referral form as the nominated proponent (or agent acting on behalf of), agree to be designated as the proponent for the action described above if it is decided that the action requires approval under Part 9 of the EPBC Act.

Signature

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Date

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Full Name

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If the referring party is a small business (fewer than 20 employees), estimate the time, in hours and minutes, to complete this form (include your time reading the instructions, working on the questions and obtaining the information and time spent by all employees in collecting and providing this information).

Hours	Minutes