

**FLORA AND FAUNA ASSESSMENT  
PROPOSED UPGRADE OF ETHANOL PLANT  
SHOALHAVEN STARCHES FACTORY  
BOMADERRY, CITY OF SHOALHAVEN**

a report prepared by

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## **1. INTRODUCTION**

Kevin Mills & Associates was engaged to assess the impact of a proposed upgrade at the Shoalhaven Starches Factory at Bomaderry. The purpose of the upgrade is to increase the production of ethanol and other products produced by the plant. The preparation of this report was commissioned by Cowman Stoddart Pty Ltd of Nowra on behalf of Shoalhaven Starches Pty Ltd which is part of the Manildra Group.

Shoalhaven Starches is proposing to increase ethanol production at the Bomaderry plant from 126 million litres to 300 million litres per year. The proposal will involve the installation of a range of additional plant on the existing Shoalhaven Starches factory site and alterations to the existing and approved wet weather storage ponds on the Company's environmental farm to accommodate components of a new wastewater treatment system.

1. The following additions and alterations to the existing factory site:
  - the provision of an additional dryer for the starch/gluten production plant;
  - additional equipment and storage capacity for the ethanol plant including 3 additional fermenters, additional cooling towers and an additional molecular sieve;
  - upgrades to the Stillage Recovery Plant including 5 additional Dried Distillers Grains Syrup (DDGS) dryers; 10 decanters and chemical storage; and two evaporators. The proposal will also include the installation of a DDGS Pellet Plant within this part of the site;
  - the establishment of a new packing plant and container loading area (including new railway spur line).
2. The proposal includes the biological treatment of waste waters from the factory site. Approximately half of the treated waste water will be re-used within the factory and the remainder irrigated onto the Company's Environmental Farm. Discussions are also being undertaken with the Paper Mill for re-use in the Mill's operations as well as the Council for re-use within the REMS scheme. The biological treatment of factory waste water will require the adaption of one of the existing Wet Weather Ponds located on the Company's Environmental Farm. In order to ensure there is no reduction in wet weather storage impacts it is intended to construct Pond No. 7 which was approved by the Minister for Planning in 2002.
3. The project will also involve an upgrade to services to the site such as electric power, natural gas, etc. The proposal includes the provision of a gas fired co-generation plant.

Most of the works will be undertaken on the factory site on the southern side of Bolong Road. However, there will also be facilities constructed on the northern side of Bolong Road, on grazing land owned by the Company. These facilities are:

- packing shed;
- container storage area;
- access roads off Bolong Road and Railway Street;
- private railway spurs joining the South Coast Railway to the west;
- pipeline along Bolong Road.

It is also proposed to adapt the approved wet weather storage pond No. 7 for the waste water treatment plant.

The above land is known as Lot 5 DP 825808 and Lot 2 DP 538289. The layout of the proposals is shown on Figure 1.

## **2. PURPOSE OF THIS REPORT**

The main purpose of this report is to assess the impact of the proposed upgrade on flora and fauna. The report contains:

- a description of the vegetation and fauna habitat on the various sites to be affected by the proposal;
- lists of the flora and fauna species observed during the site inspection; and
- an assessment of the potential impact of the upgrade on flora and fauna, including species, populations and communities listed under the *New South Wales Threatened Species Conservation Act 1995* and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*.

## **3. SITE INSPECTIONS AND SURVEYS**

Most of the new facilities will be constructed at the factory on the southern side of Bolong Road, on sites that have already been cleared and are bereft of vegetation. These areas were not inspected, with the exception of the sites for the proposed water treatment / filtration plant and gas-fired co-generator that were inspected because of their proximity to the Shoalhaven River. The sites had not been marked on the ground but were accurately identified for the consultant by Shoalhaven Starches staff, Mr S Foggo and Mr S Thompson.

The proposed site for the new packing plant and container loading area on the northern side of Bolong Road was also inspected, as well as the area within the footprint of Pond No.7, where alterations will be made to the existing and approved wet weather storage ponds on the environmental farm.

The site inspections and surveys were undertaken on 16 and 17 August 2007 and January 2008. The weather conditions were suitable; it was a fine and clear day, tending to cloudy in the afternoon, and warm for winter.

The species names in this report are based on the *Flora of New South Wales* (Harden 1992-2002), the Australian Museum's *The Mammals of Australia* (Strahan 1995), *Australian Bats* (Churchill 1998), *The Taxonomy and Species of Birds of Australia and its Territories* (Christidis & Boles 1994) and *Reptiles and Amphibians of Australia* (Cogger 1992).

#### 4. DESCRIPTION OF THE VEGETATION

##### i. Factory Sites

No native vegetation occurs on the proposed ethanol upgrade sites at the factory. Most of the sites have been cleared and sealed, and/or subjected to such heavy use or traffic as to obliterate all vegetation, native or otherwise, except for occasional weeds. The sites for the proposed water treatment / filtration plant and gas-fired co-generators, which are located about 50 metres and 70 metres from the northern bank of the Shoalhaven River, respectively, were found to be cleared land. A narrow riparian corridor augmented by recently planted trees stands between the edge of the river and these sites.

##### ii. Environmental Farm

The Shoalhaven Starches' environmental farm has been cleared and farmed for more than a century. Located on the broad floodplain of the lower Shoalhaven River, much of the farm is irrigated with wastewater from the company's plant. The paddocks have been pasture improved and grazed for many years, and native vegetation has almost totally disappeared, except along the edge of Broughton Creek.

##### Packing plant, rail siding, etc.

- The site for the proposed packing plant, container loading area and associated access road and rail siding is on cleared land owned by Shoalhaven Starches on the northern side of Bolong Road. The site is in a cleared paddock dominated by Kikuyu Grass *Pennisetum clandestinum* and other introduced species such as White Clover *Trifolium repens*, Mouse-eared Chickweed *Cerastium glomeratum*, Paddy's Lucerne *Sida rhombifolia*, Fireweed *Senecio madagascariensis*, Spear Thistle *Cirsium vulgare* and Blackberry *Rubus fruticosus*. There are occasional Black Wattles *Acacia mearnsii* on the site.

There are a few trees in the far southern part of the site and near Abynathys Creek on the eastern edge of the site; these are mostly Black Wattle *Acacia mearnsii*.

##### Pipeline Route

The proposed pipeline is from the eastwards along the northern side of Bolong Road within freehold land, mainly owned by Shoalhaven Starches, to the factory site. The route is treeless, dominated by a thick sward of Kikuyu Grass *Pennisetum clandestinum*.

### Changes to storage Ponds

The area to be affected by alterations to the existing and approved (although unconstructed) wet weather storage ponds is cleared land use for grazing, a paddock dominated by Kikuyu Grass *Pennisetum clandestinum* and other introduced pasture species.

### iii. Plant Species Recorded

The plant species recorded in the areas to be affected by the proposed works have been listed below, in Table 1. Native plants are uncommon in those areas because of the long history of industrial use (on the factory site) and grazing (on the environmental farm). Mainly introduced plant species are present.

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**Table 1**  
**Plant species recorded**

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Taxonomic Name	Common Name
<b>Native plant species</b>	
<i>Acacia mearnsii</i>	Black Wattle
<i>Elaeocharis sphacelata</i>	Tall Spike-rush
<i>Hypolepis muelleri</i>	Harsh Ground Fern
<i>Ranunculus inundatus</i>	River Buttercup
<b>Introduced plant species</b>	
<i>Ageratina adenophora</i>	Crofton Weed
<i>Cerastium glomeratum</i>	Mouse-eared Chickweed
<i>Cirsium vulgare</i>	Spear Thistle
<i>Hypochaeris radicata</i>	Flatweed
<i>Ipomoea indica</i>	Morning Glory
<i>Lantana camara</i>	Lantana
<i>Paspalum urvillei</i>	Vasey Grass
<i>Pennisetum clandestinum</i>	Kikuyu Grass
<i>Rubus fruticosus</i> sp. agg.	Blackberry
<i>Senecio madagascariensis</i>	Fireweed
<i>Sida rhombifolia</i>	Paddy's Lucerne
<i>Trifolium repens</i>	White Clover
<i>Verbena bonariensis</i>	Purpletop

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## 5. FAUNA HABITAT

There is little to attract native animals to the factory site, but Shoalhaven Starches' environmental farm provides wetland habitat for a wide range of waterbirds. The fauna species that have been recorded on the Shoalhaven Starches land at Bomaderry have been listed below, in Table 2. All of the species were recorded on the environmental farm during previous surveys by the consultant. Only a few species were observed during the current survey on the sites to be affected by the proposal upgrade; see column 3. This is not surprising, given the highly modified nature of the sites.

**Table 2**

**Fauna species recorded on Shoalhaven Starches land, Bomaderry**

Species	Taxonomic Name	Current Survey 2007/08
<b>Mammals</b>		
Brown Hare*	<i>Lepus capensis</i>	
Cattle*	<i>Bos taurus</i>	X
Short-beaked Echidna	<i>Tachyglossus aculeatus</i>	
<b>Birds</b>		
Australian Magpie	<i>Gymnorhina tibicen</i>	X
Australian Pelican	<i>Pelecanus conspicillatus</i>	
Australian Raven	<i>Corvus coronoides</i>	X
Australian White Ibis	<i>Threskiornis molucca</i>	X
Australian Wood Duck	<i>Chenonetta jubata</i>	
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	
Black-shouldered Kite	<i>Elanus axillaris</i>	
Brown Songlark	<i>Cincloramphus cruralis</i>	
Cattle Egret*	<i>Ardea ibis</i>	X
Chestnut Teal	<i>Anas castanea</i>	
Common Mynah*	<i>Acridotheres tristis</i>	X
Common Starling*	<i>Sturnus vulgaris</i>	X
Darter	<i>Anhinga melanogaster</i>	
Dollarbird	<i>Eurystomus orientalis</i>	
European Goldfinch	<i>Carduelis carduelis</i>	
Fairy Martin	<i>Hirundo ariel</i>	
Galah	<i>Cacatua roseicapilla</i>	
Golden-headed Cisticola	<i>Cisticola exilis</i>	
Great Cormorant	<i>Phalacrocorax carbo</i>	
Great Egret	<i>Ardea alba</i>	
Grey Butcherbird	<i>Cracticus torquatus</i>	
Grey Fantail	<i>Rhipidura fuliginosa</i>	
Grey Shrike-thrush	<i>Colluricincla harmonica</i>	X
Grey Teal	<i>Anas gracilis</i>	
House Sparrow*	<i>Passer domesticus</i>	X
Little Pied Cormorant	<i>Phalacrocorax melanoleucos</i>	
Magpie-lark	<i>Grallina cyanoleuca</i>	X
Masked Lapwing	<i>Vanellus miles</i>	X
Olive-backed Oriole	<i>Oriolus sagittatus</i>	X
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	
Richard's Pipit	<i>Anthus novaeseelandiae</i>	
Rock Dove*	<i>Columba livia</i>	
Sacred Kingfisher	<i>Todiramphus sanctus</i>	
Silver Gull	<i>Larus novaehollandiae</i>	
Spotted Turtle-Dove*	<i>Streptopelia chinensis</i>	
Straw-necked Ibis	<i>Threskiornis spinicollis</i>	X
Superb Fairy-wren	<i>Malurus cyaneus</i>	X
Welcome Swallow	<i>Hirundo neoxena</i>	X
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	



White-faced Heron	<i>Egretta novaehollandiae</i>
White-necked Heron	<i>Ardea pacifica</i>
Willie Wagtail	<i>Rhipidura leucophrys</i>
Yellow Thornbill	<i>Acanthiza nana</i>
Yellow-billed Spoonbill	<i>Platalea flavipes</i>
Yellow-rumped Thornbill	<i>Acanthiza chrysorrhoa</i>

#### Frogs

Common Eastern Froglet	<i>Crinia signifera</i>	X
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\*Introduced species.

## 6. POTENTIAL FOR THREATENED SPECIES, POPULATIONS AND COMMUNITIES TO OCCUR ON THE SITE

### i. Threatened Species

Threatened species are listed on schedules under the New South Wales *Threatened Species Conservation Act 1995* (TSC Act) and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Under the TSC Act, they are classified either as "endangered" (Schedule 1, Part 1), "vulnerable" (Schedule 2) or "presumed extinct" (Schedule 1, Part 4). Under the EPBC Act, they are classified as "extinct", "critically endangered", "endangered" or "vulnerable".

Information on the occurrence of threatened species in New South Wales can be obtained from the NSW Wildlife Atlas, which is maintained by the National Parks and Wildlife Service (NPWS). The Wildlife Atlas was scanned for threatened species previously recorded in the local area, within about 10 kilometres of the Shoalhaven Starches factory; these species have been listed below, in Table 3, together with each species' classification under the TSC and EPBC Acts, and a summary assessment of their potential to occur on this site.

No threatened species were recorded during the survey. Based on an assessment of the habitat preferences and habitat requirements of the threatened species known to occur in the local area, no threatened species are expected to occur on this site; see Table 4, below.

**Table 3**  
**Threatened species known to occur in the local area**

Species	TSC EPBC		Potential to occur on the Shoalhaven Starches site.
	Act*	Act*	
<b>Plants</b>			
Four threatened plant species have been recorded in the local area, within about 10 km of the site. None of the species was recorded on the site and none are expected to occur there.			
<i>Eucalyptus langleyi</i>	V	V	<i>Eucalyptus langleyi</i> does not occur on this site. It occurs on sandstone, not alluvial soils on floodplains.
<i>Triplarina nowraensis</i>	E	E	<i>Triplarina nowraensis</i> does not occur on this site. There is no habitat for this species, which occurs on moist sandstone sites.

<i>Pterostylis gibbosa</i>	E	E	<i>Pterostylis gibbosa</i> occurs on the Berry Siltstone. There are no areas of potential habitat for this small terrestrial orchid on this site.
<i>Zieria baeuerlenii</i>	E	E	<i>Zieria baeuerlenii</i> does not occur on this site. It is restricted to the Bomaderry Creek area.

### Mammals

No threatened mammal species are expected to occur on this site. Five threatened mammals have previously been recorded in the local area, although none recently. Most of the records are very old and most of the species occur in highly restricted habitats that are not represented on this site.

Brush-tailed Rock-wallaby <i>Petrogale penicillata</i>	V	V	Brush-tailed Rock-wallabies occur on large rock outcrops with a network of rock ledges. The species does not occur on this site; there is no suitable habitat.
Koala <i>Phascolarctos cinereus</i>	V	-	There is no habitat for koalas on this site. Koalas occur in forest and woodland containing their preferred feed tree species.
Long-nosed Potoroo <i>Potorous tridactylus</i>	V	V	Potoroos inhabit eucalypt forest and heath with good ground cover. There is no habitat for potoroos on this site.
Spotted-tailed Quoll <i>Dasyurus maculatus</i>	V	V	Quolls would not occur on this site. They occur in a wide range of habitats, but always in bushland. There is no habitat for quolls on this site.
Yellow-bellied Glider <i>Petaurus australis</i>	V	-	Yellow-bellied Gliders occur in forest containing their preferred feed tree species. There is no suitable habitat on this site.

### Birds

Fourteen (14) threatened bird species have been recorded in the local area. One or two, such as the Square-tailed Kite and Osprey, could occur in the vicinity of Shoalhaven Starches' land, for example on the Shoalhaven River or along Broughton Creek. However, because of the absence of suitable habitat, no threatened bird species would occur on the sites to be affected by the proposed upgrade. The absence of forest and woodland precludes most of the other species ever occurring there.

Australasian Bittern <i>Botaurus poiciloptilus</i>	V	-	Australasian Bitterns and Black Bitterns would not occur on this site; there is no suitable habitat. Australasian Bitterns inhabit freshwater wetlands with sedges, rushes and reeds, while Black Bitterns inhabit wetlands, rivers and creeks fringed by dense vegetation.
Black Bittern <i>Ixobrychus flavicollis</i>	V	-	
Blue-billed Duck <i>Oxyura australis</i>	V	-	There is no habitat on this site for Blue-billed Ducks and Freckled Ducks. Blue-billed Ducks occur on deep permanent swamps and lakes with dense aquatic flora, while Freckled Ducks occur in large freshwater wetlands with dense vegetation.
Freckled Duck <i>Burhinus magnirostris</i>	V	-	
Powerful Owl <i>Ninox strenua</i>	V	-	There is no habitat on this site for threatened owls. Powerful Owls and Masked Owls occur in forest and woodland, usually
Masked Owl	V	-	mature forest containing a good population of arboreal mammals

<i>Tyto novaehollandiae</i> Sooty Owl	V	-	for prey. Sooty Owls occur in rainforest and tall wet eucalypt forest. None of these species would occur on this site.
<i>Tyto tenebricosa</i>			
Glossy Black-Cockatoo <i>Calyptorhynchus lathami</i>	V	-	Glossy Black-Cockatoos would not occur on the site; there is no suitable habitat. They occur in dense stands of Black She-oaks.
Bush Stone-curlew	E	-	Bush Stone-curlews occur in lightly timbered, grassy open forest and woodland. There is no habitat for curlews in this area.
Olive Whistler <i>Pachycephala olivacea</i>	V	-	Olive Whistlers, Regent Honeyeaters and Turquoise Parrots would not occur on this site. They are birds of the forest;
Regent Honeyeater <i>Xanthomyza phrygia</i>	E	E	they do not occur in open paddocks or on industrial sites.
Osprey <i>Pandion haliaetus</i>	V	-	Neither species would occur on this site, but it is feasible that they could be seen flying on rare occasions over this part of the floodplain or along the river. Ospreys occur in coastal areas and along the lower reaches of rivers. Square-tailed Kites occur in forest and woodland in coastal and subcoastal areas.
Square-tailed Kite <i>Lophoictinia isura</i>	V	-	

### Frogs

Two threatened frog species have been recorded in the local area although the record of one of the species, the Giant Burrowing Frog, was based on scant evidence and has never been confirmed. The potential for the other species, the Green and Golden Bell Frog, to occur on the subject land was carefully considered because of the presence of low-lying areas on the environmental farm periodically holding freshwater.

Giant Burrowing Frog <i>Heleioporus australiacus</i>	V	V	Giant Burrowing Frogs would not occur on this site; there is no suitable habitat. They are associated with streams, swamps and soaks underlain by sandstone.
Green and Golden Bell Frog <i>Litoria aurea</i>	E	V	Bell Frogs inhabit still, shallow and unpolluted ponds and wetlands, ephemeral and permanent, containing reeds. The ponds must be free of Plague Minnow and other predatory fish. Bell Frogs occur in Coomonderry Swamp, to the north, around Nowra, and in the Culburra - Orient Point area. The species is not likely to occur on this site. There is no suitable habitat.

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\* V = vulnerable, E = endangered, - = not listed.

### ii. Migratory Species

In addition to threatened species, the EPBC Act allows for the listing of internationally protected migratory species, i.e. species listed under the Japan - Australia Migratory Bird Agreement (JAMBA), the China - Australia Migratory Bird Agreement (CAMBA) and the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).

Many common Australian bird species have been listed as internationally protected migratory species under the EPBC Act. Some would occur on the Shoalhaven Starches site from time to time, mostly waterbirds and birds of prey. However, there are no areas of important habitat

for these species on the site, and the site does not support an ecologically significant proportion of a population such species.

### **iii. Endangered Populations**

Endangered populations are listed under the TSC Act (Schedule 1, Part 2). No endangered populations have been declared on the site.

### **iv. Endangered Ecological Communities**

Endangered ecological communities are listed under the TSC Act (Schedule 1, Part 3) and under the EPBC Act. There are no endangered ecological communities on the site.

## **7. IMPACT OF THE PROPOSED UPGRADE**

### **i. Impact on Native Vegetation and Fauna Habitat**

The proposed upgrade will have little impact on flora and fauna. The site has a low diversity of native plant species and, except for the ponds on the environmental farm, there is little to attract native animals.

### **ii. Threatened Species Conservation Act**

The New South Wales *Environmental Planning and Assessment Act 1979*, as amended by the *Threatened Species Conservation Act 1995* and *Threatened Species Conservation Amendment Act 2002*, requires that various factors be taken into account in deciding whether a proposed action, development or activity is likely to have a significant effect on threatened species, populations or communities, or their habitats and, hence, whether the preparation of a Species Impact Statement (SIS) is warranted. These factors have been applied, below, to the proposed upgrade.

*(a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction*

The proposed upgrade is not likely to have an adverse effect on the life cycle of any threatened species, much less so to the extent that a viable local population would be placed at risk of extinction.

*(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction*

The proposed development is not likely to have an adverse effect on the life cycle of any endangered population. No endangered populations occur in this area.

*(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:*

*(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction*

*(ii) is likely to substantially and adversely modify the composition of the ecological community such that its occurrence is likely to be placed at risk of extinction*

The proposed upgrade is not likely to have an adverse effect on any endangered ecological community. No endangered ecological communities occur on the site.

*(d) in relation to the habitat of a threatened species, population or ecological community:*

*(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed*

*(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action*

*(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality*

The proposed upgrade is not likely to have any of the above effects; there is no habitat for threatened species, populations or ecological communities on the site.

*(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)*

Critical habitat refers to areas of land listed in the Registers of Critical Habitat. No critical habitat has been declared on the site.

*(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan*

Not applicable. There is no habitat for threatened species, populations or ecological communities on the site.

*(g) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.*

Key threatening processes are listed under the *Threatened Species Conservation Act 1995* and *Fisheries Management Act 1994*. No key threatening processes are likely to operate as a result of the proposed upgrade.

#### Conclusion, TSC Act

The proposed upgrade is not likely to have a significant effect on species, populations or communities listed under the *Threatened Species Conservation Act 1995*, or their habitats; hence, the preparation of a Species Impact Statement (SIS) is not warranted.

#### **iii. Environment Protection and Biodiversity Conservation Act**

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* specifies that approval is required from the Commonwealth Minister for the Environment and Heritage for actions that have, will have or are likely to have a significant impact on a matter of "national environmental significance", viz. listed threatened species and communities,

migratory species protected under international agreements, RAMSAR wetlands of international importance, the Commonwealth marine environment, World Heritage properties, National Heritage places and nuclear actions.

The Department of Environment and Heritage (2005) has published guidelines to assist in determining whether an action will have or is likely to have a significant impact on a matter of national environmental significance and, hence, whether a referral should be submitted to the Department for a decision by the Minister on whether assessment and approval is required under the EPBC Act. In particular, the following questions should be considered:

*Are there matters of national environmental significance located in the area of the proposed action?* No; no matters of national environmental significance are known to be located on the subject land.

*Considering the proposed action at its broadest scope, is there potential for impacts on matters of national environmental significance?* No.

*Are there any proposed measures to avoid or reduce impacts on matters of national environmental significance?* No.

*Are any impacts of the proposed action on matters of national environmental significance likely to be significant impacts?* No.

#### Conclusion, EPBC Act

The proposed upgrade is not likely to have a significant effect on any matters of national environmental significance listed under the *Environment Protection and Biodiversity Conservation Act, 1999*. Referral to the Commonwealth Environment Minister for approval is therefore not warranted.

## **8 CONCLUSION**

The proposed upgrade will have little impact on native flora and fauna. There are no areas of high conservation value on the site. The proposal is not likely to have an adverse impact on species, populations and communities listed under the *New South Wales Threatened Species Conservation Act, 1995* and the *Commonwealth Environment Protection and Biodiversity Conservation Act, 1999*; no threatened species, populations or communities are known to occur on the subject land or are expected to occur there. The preparation of a Species Impact Statement (SIS) nor referral to the Commonwealth Environment Minister for approval is therefore not warranted.

**Recommendations**

(i) As far as is practicable, given the presence of the factory, the verges of Abernathys Creek should be planted with native species.

(ii) Appropriate screen plantings should be installed around the packing shed/loading area; local native species should be used for this purpose.

(iii) Additional plantings should be made in the environmental protection zone near the Shoalhaven River.

(iv) The list of local native species at Appendix 1 should be utilised in the planting programs around the site, as identified above. The list is not exhaustive and it is expected that not all species be used.

\* \* \* \* \*

## 9 REFERENCES

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APPENDIX 1  
LIST OF LOCAL NATIVE PLANT SPECIES

Species	Screening	Floodplain	Creek Side
<u>Trees</u>			
<i>Acacia binervata</i> (Not permanent planting)	X	X	X
<i>Acacia maidenii</i> (Not permanent planting)	X	X	X
<i>Acacia mearnsii</i> (Not permanent planting)	X	X	X
<i>Alphitonia excelsa</i>	X	X	
<i>Angophora floribunda</i>	X	X	
<i>Callistemon salignus</i>	X	X	X
<i>Casuarina cunninghamiana</i>			X
<i>Casuarina glauca</i>	X		X
<i>Duboisia myoporoides</i>		X	
<i>Eucalyptus tereticornis</i>	X	X	
<i>Ficus macrophylla</i>			X
<i>Ficus obliqua</i>			
<i>Glochidion ferdinandi</i>	X	X	X
<i>Livistona australis</i>		X	X
<i>Melaleuca decora</i>	X	X	
<i>Melaleuca linariifolia</i>	X	X	
<i>Melaleuca styphelioides</i>	X	X	X
<i>Melia azedarach</i>	X	X	X
<i>Myoporum acuminatum</i>	X	X	X
<i>Pittosporum undulatum</i>	X	X	X
<u>Shrubs</u>			
<i>Acacia longifolia</i>	X	X	
<i>Indigofera australis</i>	X	X	
<i>Melaleuca hypericifolia</i>	X		
<u>Other Plants</u>			
<i>Hibbertia scandens</i>		X	X
<i>Juncus</i> spp.			X
<i>Lomandra longifolia</i>		X	X
<i>Poa labillardieri</i>		X	X