

FLORA AND FAUNA ASSESSMENT

EXPANSION OF THE SOUTH COAST CORRECTIONAL CENTRE SOUTH NOWRA, CITY OF SHOALHAVEN

a report prepared by

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1 Introduction

The Department of Corrective Services (DCS) proposes to construct expanded facilities at their correctional centre at South Nowra, on the South Coast of New South Wales. The correctional centre is referred to as the South Coast Correctional Centre (SCCC).

The proposed expansion is located to the north of the main correctional centre, and within the existing complex. This study is not concerned with the works proposed inside the complex, as that area is already developed and contains no habitat.

Kevin Mills & Associates were engaged by Guymer Bailey Architects on behalf of the NSW Department of Public Works to undertake a study of the flora and fauna of the project area. The Company carried out the original surveys for construction of the gaol and previously prepared reports for the site (KMA 2007; 2009).

The Site

The SCCC is situated adjacent to the Princes Highway at South Nowra, approximately five kilometres south of the Nowra town centre, and on the southern fringe of the Nowra urban area; see Figure 1. Land use to the north and east is generally mixed use industrial development. There is a brick works and quarry immediately to the east of the site and large lots and other private land in the other directions.

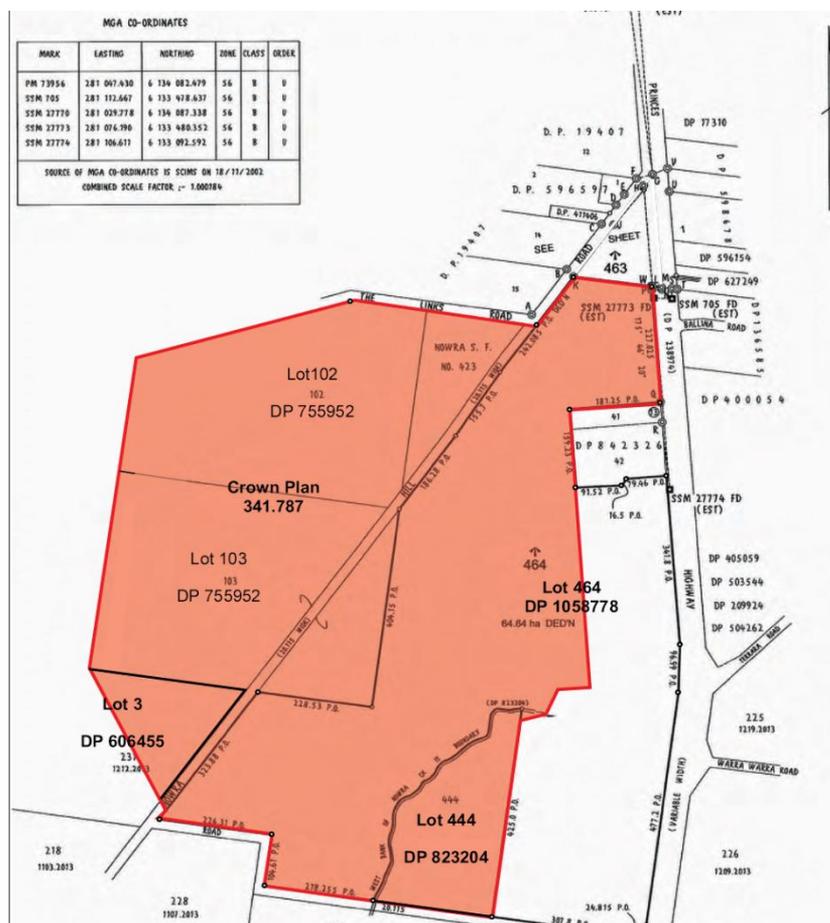


Figure 1. Location of the SCCC site at South Nowra.

The project area is underlain by Permian Berry Siltstone, a rock that consists of mid to dark-grey siltstones (Bembrick & Holmes 1976) and forms a deep, grey to yellowish clayey soil. The area is in the low rainfall zone around Nowra; the rainfall at Nowra Bowling Club, five kilometres from the project area, is on average 1028 mm per year.

The area of investigated includes four areas where there are trees; the remainder of the site is bare ground, car park or grassed areas. These areas are shown on **Figure 2**.



Figure 2. Study areas at the SCCC.

The Study

The previous Director General's Environmental Assessment Requirements issued on 11 October 2007 requires the Environmental Assessment to assess the likely environmental impacts and means of managing this impact including; these requirements have been followed again in this study.

- any likely flora and fauna impacts as a result of the development on the site including impacts on habitat and biodiversity linkages and corridors;
- impacts on species listed under Section 18 and 18A of the EPBC Act;
- impacts on other threatened species, populations and ecological communities, critical habitat (including riparian habitat) and native vegetation generally;

- impacts on migratory species listed under the EPBC Act;
- any likely impacts on the water courses to Nowra Creek, proposed riparian corridor, including riparian corridor objectives, identification of core riparian zones and management regime vegetated buffer zones and the preparation of a vegetation management plan.

The previous investigations in 2009 thoroughly surveyed the project area, including the current site. This study in 2016 surveyed the relevant parts of the site on 13 May 2016. Given the small size and highly modified character of the site, one day of survey and no night-time surveys are justified in this case.

Relevant Legislation

Environment Planning and Assessment Act

The *Environment Planning and Assessment Act, 1979* (NSW) provides the framework for overall environmental planning and development assessment throughout the state and encourages ecologically sustainable development. Amendments by the *Threatened Species Conservation Act 1995* are particularly important; see below.

Threatened Species Conservation Act

The *Threatened Species Conservation Act, 1995* (NSW) (TSC Act) aims "to conserve biological diversity and promote ecologically sustainable development" and "to ensure that the impact of any action affecting threatened species, populations and ecological communities is properly assessed".

The TSC Act amends the EP&A Act by inserting Section 5A, which requires that certain matters be taken into account when considering whether a proposal is likely to have a significant effect on threatened species, populations or ecological communities, and their habitat, and whether the preparation of a Species Impact Statement (SIS) is required. This has become known as the "seven part test".

Threatened species are listed on schedules under the TSC Act, where they are classified as "endangered" (Schedule 1, Part 1), "vulnerable" (Schedule 2) or "presumed extinct" (Schedule 1, Part 4). "Endangered ecological communities" are listed on Schedule 1 Part 3, while "endangered populations" are listed under Schedule 1 Part 2. "Critical habitat" may be declared under Part 3 of the Act, but no such habitat has yet been listed.

Fisheries Management Act

The *Fisheries Management Act, 1994* (NSW) (FM Act) and the TSC Act contain similar provisions. The FM Act amends the EPA Act integrating the consideration of threatened "fish" and marine plant conservation (mangroves, seagrass and algae) conservation into the environmental planning and assessment process.

The FM Act provides for the protection, conservation and recovery of threatened species, and makes provision for the management of threats to threatened species, populations and ecological communities.

State Environmental Planning Policies

Several State Environmental Planning Policies (SEPPs) involve the protection of flora and fauna and their habitat. The following SEPPs should be considered for the project area:

SEPP No. 14 – Coastal Wetlands;

SEPP No. 26 – Littoral Rainforest; and
SEPP No. 44 – Koala Habitat Protection.

The *Environment Protection and Biodiversity Conservation Act, 1999* (Commonwealth) (EPBC Act) aims to protect the following matters of national environmental significance are identified under the Act (# those relevant to the current site):

- listed threatened species and communities#
- listed migratory species#
- Ramsar wetlands of international importance
- Commonwealth marine environment
- world heritage properties
- national heritage places
- the Great Barrier Reef Marine Park
- nuclear actions
- a water resource, in relation to coal seam gas development and large coal mining development.

Threatened species are listed on schedules under the Act, where they are classified as "extinct", "critically endangered", "endangered", "vulnerable" or "conservation dependent". Schedules also list migratory species and endangered communities.

The Act specifies that approval is required from the Commonwealth Minister for the Environment for actions that have, will have or are likely to have a significant impact on a matter of "national environmental significance".

Actions on or outside Commonwealth land that have, will have or are likely to have a significant impact on the environment on or outside Commonwealth land must also be referred to the Commonwealth Minister for assessment and approval, as well as the actions of Commonwealth agencies inside or outside the Australian jurisdiction that have, will have or are likely to have a significant impact on the environment inside or outside the Australian jurisdiction.

The Commonwealth has issued Principal Significant Impact Guidelines 1.1, Matters of National Environmental Significance (Department Environment & Heritage 2005) to assist proponents in determining whether an action is likely to be significant and, hence, whether it should be referred to the Commonwealth Minister for assessment and approval.

2 Survey Results

2.1 Flora

The main type of forest in the project area was described in the previous reports (KMA 2007 and 2009). This was described as Spotted Gum *Corymbia maculata* - Ironbark *Eucalyptus paniculata* Forest. The forest had been heavily logged, and large trees were rare. Since that time, the Correctional Centre and later the Community Offenders Support Program Centre have been constructed. This has further modified the forest on the SCCC site.

The site today is highly modified from its natural condition. Most of the area involved in the SCCC expansion are treeless, and covered in exotic mown grassland; see **Figure 2**. Four

areas were particularly investigated as these contain stands of trees. The remainder of the development area is mown grass, bare ground, tarred area or building.

A list of plant species recorded in the four areas investigated is presented in **Appendix 1**.

Area 1

The trees present in this area are Spotted Gum *Corymbia maculata*, Grey Ironbark *Eucalyptus paniculata*, Woollybutt *Eucalyptus longifolia* and Thin-leaved Stringybark *Eucalyptus eugenioides*. The trees are slender stemmed and there are no large tree following many years of logging prior to the SCCC taking over the site. The understorey is rather sparse, with bare ground, disturbed soils and mostly a scattering of native ground cover plants; see **Photograph 1**. Typical groundcover species include *Acacia falcata*, *Lomandra longifolia*, *Dianella revoluta*, *Pultenaea villosa*, *Hardenbergia violacea* and various native grasses.

To the east of the site, there is an artificial pond much of which is covered in Cumbungi *Typha orientalis*.

Area 2

This small area supports similar forest trees and other plants to Area 1, containing the same trees; see **Photograph 2**. The groundcover here is more disturbed but still supports various native species.

A small watercourse and well forested floodplain occurs not far to the east of Area 2. This was previously identified as Spotted Gum *Corymbia maculata* – Paperbark *Melaleuca* spp Forest. This forest is not on the area to be cleared and is to be protected under the conditions of the previous development approval.

Area 3

This area is a fringe of trees along the north-western edge of the cleared land and includes; see **Photograph 3**. Again, the forest contains small trees and a quite disturbed ground cover.

The drain on the western end of the nearby pond will be filled. This is mostly rather dry and supports a dense stand of Cumbungi *Typha orientalis* see **Photograph 4**. Smaller drains entering this channel are eroding badly.

One large old tree occurs outside the tree line in Area 3; see **Photograph 7**.

A small watercourse and well forested floodplain occurs not far to the west of Area 3. This was previously identified as Spotted Gum *Corymbia maculata* - Paperbark *Melaleuca* spp. Fores. This forest is not on the area to be cleared and is to be protected under the conditions of the previous development approval.



Photograph 1. Survey area 1; note small size of trees and sparse understorey



Photograph 2. Survey area 2; small trees and a disturbed ground.



Photograph 3. Survey area 3; the vegetation is similar to areas 1 and 2.



Photograph 4. The main drain in area 3, which will be filled.



Photograph 5. The edge of the trees in Area 4.



Photograph 6. Floodplain forest around Nowra Creek in Area 4.

Area 4

A batter is required at the south-eastern corner of the new edge of the expanded gaol facility. The area is almost all cleared, see **Figure 2**. The original batter design would encroach well into the trees and impact upon the floodplain forest; see **Photograph 6**. This has now been revised to avoid any works on the floodplain; see **Figure 2**. The trees present in the area impacted are Spotted Gum *Corymbia maculata*, Woollybutt *Eucalyptus longifolia* and Grey Ironbark *E. paniculata*. The understorey is partly disturbed and quite open in places. The shrub Silky Hakea *Hakea sericea* is thick in some locations, while the small tree Native Cherry *Exocarpos cupressiformis* is moderately common.

2.2 Fauna

As can be appreciated by the above description of the site and the remaining vegetation, the forest exhibits a simple structure and low diversity of plants so that animal habitat value is minimal. Essentially, the site supports stands of quite small trees with small and scattered groundcover plants. The only large tree is one in Area 3, see **Photograph 7**. This is the only tree with hollows; it contains a few small branch hollows.



Photograph 7. The large *Corymbia maculata* tree in Area 3, which contains a few small branch hollows.

The ponds in the area support reeds and other fringing wetland vegetation, particularly Cumbungi *Typha orientalis*. There appears to no Plague Minnow *Gambusia holbrooki* in the ponds, a predator of native frogs including the endangered Green and Golden Bell Frog.

3 Conservation Values

Significant Plant Species

The previous surveys (KMA 2007, 2009) searched for listed threatened plant species across the whole of the project area; no such species were found. The list in **Table 1**, below, were targeted in those earlier surveys. The table gives the status of the species under the TSC and EPBC Acts and notes on the species habitat, etc.

Because of its local occurrence, a systematic search was carried out for the terrestrial Illawarra Greenhood Orchid *Pterostylis gibbosa* in previous surveys of the site and none were found. A survey was also undertaken in May and August 2016 to search for leaf rosettes; none were found. Given the previous surveys and the disturbed nature of most of the ground, it seems unlikely that this orchid occurs on the areas to be cleared.

Table 1
Threatened plant species occurring in the local area

Species	TSC Act ⁺	EPBC Act ⁺	Potential to occur on the site
<i>Cryptostylis hunteriana</i> Leafless Tongue-orchid	V	V	<i>Cryptostylis hunteriana</i> is not likely to occur in the project area, the habitat in project area is not suitable and it was not found there. The highly modified habitat on the current site would be highly unlikely to support this orchid.
<i>Pterostylis gibbosa</i> Illawarra Greenhood Orchid	E	E	<i>Pterostylis gibbosa</i> could occur in area. There is suitable habitat and it occurs about one kilometre to the northeast. It was not found in the previous surveys nor the current surveys and the highly modified habitat on the site is very unlikely to support this orchid.
<i>Syzygium paniculatum</i> Magenta Lilly Pilly	V	V	<i>Syzygium paniculatum</i> ; an obvious tree, this species was not found on the site.
<i>Triplarina nowraensis</i> Nowra Heath-myrtle	E	E	<i>Triplarina nowraensis</i> grows on sandstone soils to the west of Nowra. An obvious shrub, this species was not found on the site.

Significant Animal Species

The NSW Wildlife Atlas was searched for threatened fauna species previously recorded in the local area, within about five kilometres of the project area. These species have been listed below, in **Table 2**, with their classification under the TSC and EPBC Acts. Species for which there is obviously no habitat in the project area, for example strictly coastal and marine species, have been excluded. All relevant species were surveyed for and/or assessed in the previous reports. The table has been modified from the one appearing in the 2007 report to reflect the current site. Those species most likely to occur in the vicinity of the site are discussed below the table.

Table 2
Threatened animal species occurring in the local area

Species	TSC	EPBC	Potential to occur on the site
	Act ⁺	Act ⁺	
Mammals			
Large-eared Pied Bat <i>Chalinolobus dwyeri</i>	V	V	Recorded on SCCC site. The local forest provides foraging habitat but no roosting sites, such as caves.
Large Bentwing Bat <i>Miniopterus schreibersii</i>	V	-	Recorded on SCCC site. The project area provides foraging habitat, but no roosting sites, such as caves and structures.
Greater Broad-nosed Bat forest. <i>Scoteanax rueppellii</i>	V	-	Possible. These bats roost in tree hollows in moist to dry forest. Occasionally recorded in the region, the species could forage on this site in the warmer months of the year.
Yellow-bellied Sheath-tail Bat <i>Saccolaimus flaviventris</i>	V	-	Possible. This bat species is widespread in Australia, where it occurs in a wide range of habitats. The species could occur in the area in the warmer months of the year; the site provides potential foraging habitat.
Grey-headed Flying-fox <i>Pteropus poliocephalus</i>	V	V	Probable. Flying-foxes would almost certainly forage in the area in summer, but there are not likely to be any suitable camp sites.
Koala <i>Phascolarctos cinereus</i>	V	-	Unlikely. Koalas are unlikely to occur in the area; there have been no recent records from near Nowra.
Yellow-bellied Glider <i>Petaurus australis</i>	V	-	Unlikely. Yellow-bellied Gliders occur in Grey Gum and Spotted Gum Forest throughout the Shoalhaven LGA, including the forest around Nowra. The species was not recorded during the previous surveys; the site contains a only a tiny area of forest.
Birds			
Bush Stone-curlew <i>Burhinus grallarius</i>	E	-	Unlikely. The Bush Stone-curlew was recorded to the north of the SCCC some years ago. The habitat on the site is marginal at best.
Gang-gang Cockatoo <i>Callocephalon fimbriatum</i>	V	-	Possible. Gang-gang Cockatoos probable occur in the general area. The cockatoo could visit any treed area.
Glossy Black-Cockatoo <i>Calyptorhynchus lathami</i>	V	-	Unlikely. Glossy Black-Cockatoos were recorded in the broader SCCC site, but there is no habitat on the site.
Masked Owl <i>Tyto novaehollandiae</i>	V	-	Unlikely. Masked Owls could occur in the broader SCCC site, but local records are few and far between.
Powerful Owl <i>Ninox strenua</i>	V	-	Possible. Powerful Owls probably occur in the local forests. They are regularly recorded in the district and there is suitable habitat on the broader SCCC site.
Square-tailed Kite <i>Lophoictinia isura</i>	V	-	Possible. Square-tailed Kites are regularly recorded around Nowra in summer, when they visit to breed.

Species	TSC Act ⁺	EPBC Act ⁺	Potential to occur on the site
Turquoise Parrot <i>Neophema pulchella</i>	V	-	Unlikely. Turquoise Parrots were recorded to the south of Nowra many years ago, but there have been no recent records.
Frogs			
Green and Golden Bell Frog <i>Litoria aurea</i>	E	V	Unlikely. Green and Golden Bell Frogs occur in swamps on the floodplain of the Shoalhaven River, some years ago frogs were found near the highway at South Nowra. The ponds on site may provide habitat, as they are fish free.

⁺ V = vulnerable, E = endangered, - = not listed.

Large-eared Pied Bat, Eastern Bentwing-bat

These cave-dwelling bats could forage over the site, but no roosting sites occur on or near the site.

Grey-headed Flying-fox

Grey-headed Flying-foxes are common around Nowra in summer. They would almost certainly visit the forest on the SCCC land to forage. Roosting would take place elsewhere, at known camps, for example on Comerong Island to the east of Nowra.

Yellow-bellied Glider

Yellow-bellied Gliders were not recorded in previous surveys and is not likely to occur in the patch of trees on the site. The modified forest on the site is not likely to be important to a local population as there are no tree hollows.

Bush Stone-curlew

The Bush Stone-curlew was observed to the north of the SCCC land some years ago; the modified forest on the site, where there is little ground cover, is not likely to be important for this species.

Gang-gang Cockatoo, Glossy Black-Cockatoo

The Gang-gang Cockatoo and Glossy Black-Cockatoo could occasionally visit the site, although the modified forest contains no special habitat features for these species. There are no hollow-bearing trees on the site that could provide useful breeding habitat.

Powerful Owl, Masked Owl

These owls could occur on the SCCC site, most likely in the taller forest along the watercourses. The generally highly modified forest on the site is not likely to be important to these species. There are no hollow-bearing trees on the site that could provide useful breeding habitat.

Square-tailed Kite

The Square-tailed Kite forages over a very large territory; the small area of modified forest on the site could not be important to this species.

In summary, none of the above species are likely to be any more than very casual visitors to the trees to be removed.

Endangered Ecological Communities

Endangered ecological communities (EEC) in New South Wales are listed under the TSC Act (Schedule 1, Part 3). Nationally threatened ecological communities are listed under the EPBC Act and some of these occur in New South Wales.

The modified Spotted Gum – Ironbark Forest on the site is not a listed EEC in New South Wales or by the Commonwealth. The nearby Spotted Gum – Paperbark Forest along the watercourse ('floodplain forest') to the east and west of the project site falls within the definition of Swamp Sclerophyll Forest on Coastal Floodplains, which is an endangered ecological community listed under the TSC Act but not the EPBC Act.

The edges of the Swamp Sclerophyll Forest to the northeast and west are over 30 metres from the proposed clearing. In the southeast, the creek floodplain is edge of the cleared land and requires a batter design that maintains at least 10 metres distance between the works and the edge of the floodplain.

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).

The habitats on the site are very unlikely to provide habitat for listed internationally protected migratory species under the EPBC Act.

Endangered Populations

Endangered populations in New South Wales are listed under the TSC Act (Schedule 1, Part 2). There are no provisions under the EPBC Act for the listing of endangered populations. No endangered populations have been declared on or near the site or the SCCC land.

Critical Habitat

Critical habitat refers only to those areas of land listed in the Register of Critical Habitat, land that is so identified under Part 3 of the *TSC Act*. No critical habitat has been declared on or near the site or the project area.

4 Impact Assessment

4.1 Impact on Native Vegetation and Habitats

The proposed expansion of facilities at the SCCC is shown on the concept plan in **Figure 3**, along with an extended batter in the south-eastern corner of the facility; see **Figure 4**. The footprint of the developments will involve clearing the stands of trees described above and shown on **Figure 2**.

The small areas of trees within the four identified areas shown on **Figure 2** are the only natural habitat to be removed or impacted. As described above, these contain slender stemmed trees with little groundcover. These treed areas do not represent important local habitat for native wildlife, including threatened or rare species. The floodplain forests noted above is important and listed as endangered; the developments do not impinge upon these areas.

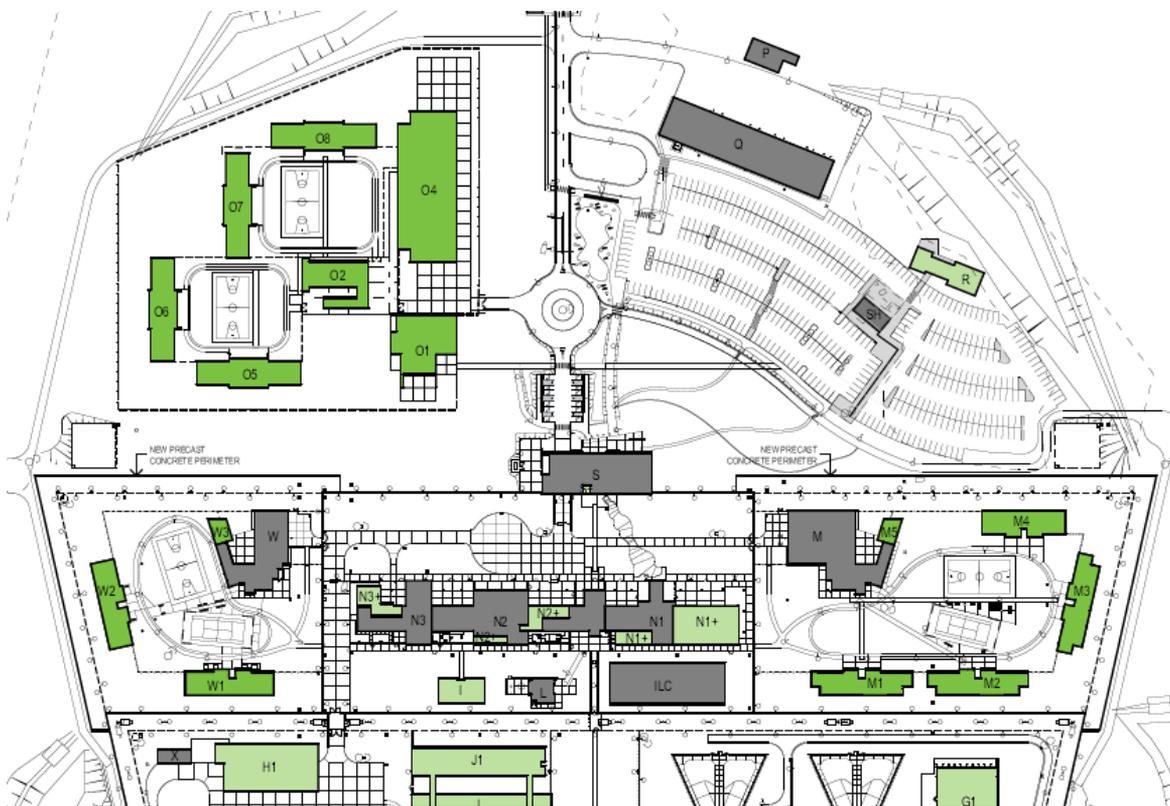


Figure 3. The northern section of the expansion of the SCCC. Green areas show new works.

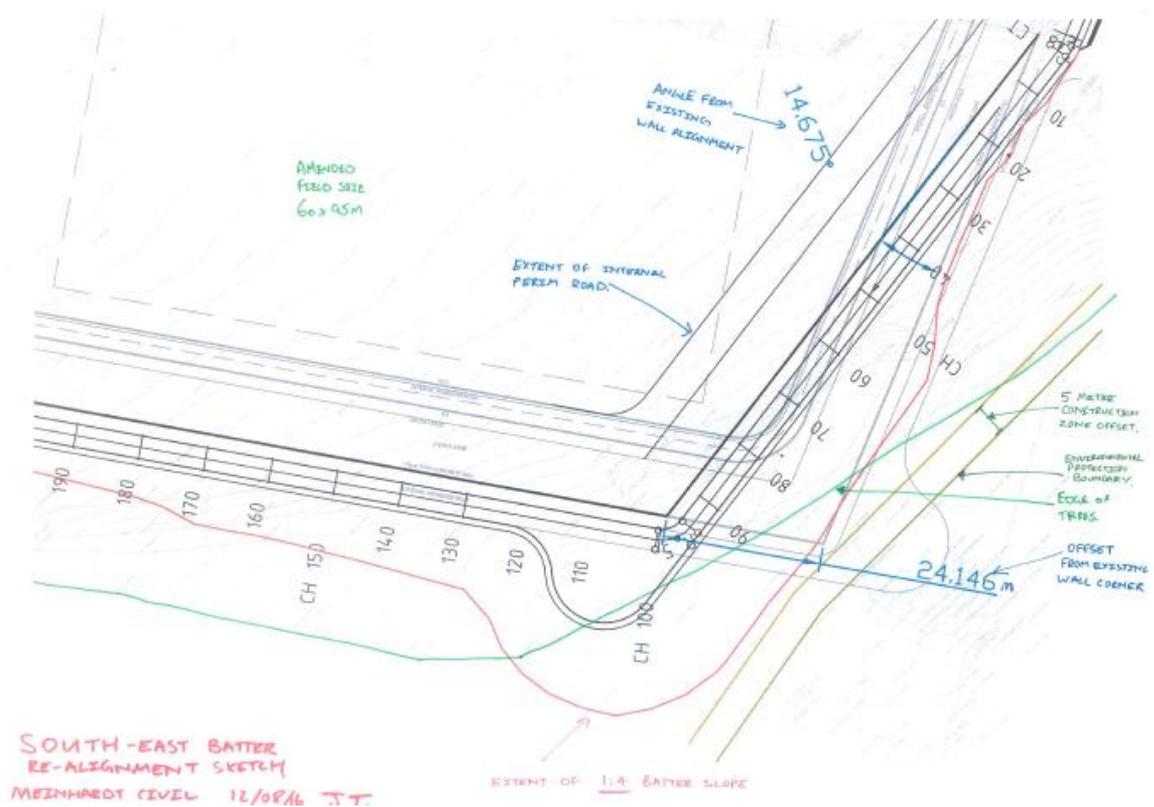


Figure 4. The south-eastern corner of facility, showing edge of the trees and (green), batter (red) and zoning boundary (olive).

4.2 Threatened Species Conservation Act

Section 5A of 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. Although not directly relevant to approvals under Part 3A of the EP&A Act, they provide a useful guide to the assessment of impacts.

The threatened species recorded in the project area or that could occur there are discussed in Section 3 of this report. The factors have been applied below to the most relevant species, to assist in determining whether the proposed development is likely to have a significant effect on these species. Endangered ecological communities are also considered where relevant.

(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

As set out in Section 3, several threatened animal species are known or likely to visit the forest on the SCCC land from time to time. The trees to be removed are not likely to be important to any of these species. No threatened plants were recorded in the area, either in previous surveys or in the current survey; see Section 3. The removal of this modified forest is not likely to lead to a viable local population of any listed species being 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 have been declared on, or adjacent to, the SCCC land.

(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 endangered ecological community known as Swamp Sclerophyll Forest on Coastal Floodplains occurs along the watercourses on the SCCC land. The closest areas are to the east and west of Areas 2 and 3, respectively. The clearing nor the associated developments impinge upon this vegetation and so avoids impacting upon this community.

(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

A small area of modified forest will be removed; this forest is not likely to be important to any threatened species.

The community Swamp Sclerophyll Forest on Coastal Floodplains is avoided by the proposed developments; there is no direct impact on this forest.

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

Critical habitat refers only to those areas of land listed as such under the Act. No critical habitat has been declared on the SCCC land.

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

Recovery plans have not been prepared for any relevant threatened species or endangered ecological communities, and no relevant threat abatement plans have been prepared.

(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.

The NSW Scientific Committee has listed many key threatening processes (KTP). The clearing will lead to the following KTP, albeit in a very minor way:

- clearing of native vegetation;
- removal of dead wood and dead trees.

Loss of hollow-bearing trees can be avoided by maintaining the large tree in Area 3; see recommendation below.

Conclusion, TSC Act

In our opinion, the expansion of the facilities at the South Coast Correctional Centre at South Nowra is not likely to have a significant impact on any threatened species, populations or communities listed under the *Threatened Species Conservation Act, 1995* (NSW), or their habitats, and the preparation of a Species Impact Statement (SIS) is not warranted.

4.3 Environment Protection and Biodiversity Conservation Act

The impact of a proposed action on matters of national environmental significance is assessed under the provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) (EPBC Act). Matters of national environmental significance are World Heritage properties, National Heritage places, wetlands of international importance (Ramsar wetlands), threatened species and ecological communities listed under the EPBC Act, migratory species listed under the EPBC Act, Commonwealth marine environment, and nuclear actions (including uranium mining). Approval is required from the Commonwealth Environment Minister for actions that are likely to have a significant impact on a matter of

national environmental significance; these are called "controlled actions". The Department of the Environment and Heritage's *Significant Impact Guidelines: Matters of National Environmental Significance* (DEH May 2006) help proponents to decide whether an action is likely to be a controlled action that should be referred to the Minister for assessment and approval.

The questions in the *Significant Impact Guidelines* (DEH May 2006) that must be addressed when deciding whether or not to refer a proposed action to the Commonwealth Minister for the Environment are addressed below.

(1) Are there any matters of national environmental significance located in the area of the proposed action (noting that 'the area of the proposed action' is broader than the immediate location where the action is undertaken; consider also whether there are any matters of national environmental significance adjacent to or downstream from the immediate location that may potentially be impacted)?

Response to (1): No matters of national environmental significance are known or are expected to occur on the site of the proposed action.

(2) Considering the proposed action at its broadest scope (that is, considering all stages and components of the action, and all related activities and infrastructure), is there potential for impacts, including indirect impacts, on matters of national environmental significance?

Response to (2): Considering the proposed action at its broadest scope, the proposal is not likely to have a direct or indirect impact on any matters of national environmental significance. Removal of the modified forest on the site is not likely to impact seriously on the bats that are listed by the Commonwealth and discussed above. At most, a tiny area of foraging habitat would be removed but no roosting or breeding habitat.

(3) Are there any proposed measures to avoid or reduce impacts on matters of national environmental significance (and if so, is the effectiveness of these measures certain enough to reduce the level of impact below the 'significant impact' threshold)?

Response to (3): No matters of national environmental significance are known or are expected to be located in the area of the proposed action other than occasional visits by bats. There are no proposed measures to avoid or reduce the very minor potential impact on these bats.

(4) Are any impacts of the proposed action on matters of national environmental significance likely to be significant impacts (important, notable, or of consequence, having regard to their context or intensity)?

Response to (4): No significant impacts on matters of national environmental significance, including listed species of bat, are likely to result from the proposed action.

Conclusion, EPBC Act

In our opinion, the expansion of the facilities at the South Coast Correctional Centre is not likely to have a significant impact on any matter of national environmental significance listed under the *Environment Protection and Biodiversity Conservation Act, 1999* (Commonwealth). Referral to the Commonwealth Minister for the Environment for assessment and approval is therefore not warranted.

4.4 Fisheries Management Act

The site does not contain a permanent watercourse or any other natural water body. Those species and communities listed under the FM Act would not occur on the site. The importance of the nearby riparian vegetation is discussed elsewhere.

4.5 SEPP No. 44 - Koala Habitat Protection

Shoalhaven Council is one of the local government areas in which *State Environmental Planning Policy No. 44 - Koala Habitat Protection* (SEPP 44) (New South Wales 1995) applies. SEPP 44 encourages the conservation and management of natural vegetation that provides habitat for Koalas, to ensure a permanent free-living population over the species' present range and to reverse the current trend of Koala population decline.

SEPP 44 helps to identify "potential Koala habitat", namely "areas of native vegetation where the trees of the types listed in Schedule 2 [of SEPP 44] constitute at least 15% of the total number of trees in the upper or lower strata of the tree component". If no Schedule 2 tree species are present or if they constitute less than 15% of the total number of trees present, then no further provisions of the Policy apply.

If more than 15% of the trees in the area are Schedule 2 tree species, then an assessment must be made by a qualified person to determine whether the area contains "core Koala habitat", a term applied to "an area of land with a resident population of koalas, evidenced by attributes such as breeding females (that is, females with young) and recent sightings of and historical records of a population".

No Schedule 2 Koala food trees occur on the site. The area is therefore not "potential Koala habitat" and no further provisions of the Policy apply. As noted above, there have been no observations of Koalas in the Nowra area for many years.

4.6 Riparian Corridors

Riparian vegetation is vegetation that is influenced by a water body, most notably by a watercourse. The species present are mostly directly associated with wet habitats. Riparian corridors encompass this riparian vegetation plus the surrounding land that ensures that the riparian vegetation and habitats are protected from surrounding development. The width of such corridors varies depending on the locality, surrounding land use, etc.

We note that the Department of Natural Resources has categorised the watercourses on the SCCC land as environmental corridors, stating that:

"In accordance with this classification, existing vegetation within a width of 40 m either side of the watercourses should be retained and protected as a core riparian zone (CRZ). In addition, a vegetated buffer of 10 m either side of the CRZ should be provided. It is important also that any bushfire asset protection zone be measured from the outer edge of the vegetated buffer so that the integrity of the CRZ is not compromised."

The watercourses on the SCCC land are identified as Category 1 – Environmental corridor the overarching objective for the management of which is to provide biodiversity linkages

by maintaining connectivity for the movement of aquatic and terrestrial species along the riparian corridor and between key destinations.

Our previous surveys identified the riparian corridors on the SCCC land and these were subsequently surveyed. The new facilities must consider the impact upon this riparian corridor, which is mostly an endangered ecological community. The surveys found that the treed areas to be removed are not the listed plant community, and the closest works are more than 15 metres from the edge of the creek floodplains.

5 Discussion

This report has provided a description of the habitats on and around the sites proposed for new facilities within the South Coast Correctional Centre (SCCC) land. The sites support small areas of forest modified through a long history of logging and more recently by works associated with the correctional centre. Essentially, the sites support young Spotted Gum – Ironbark Forest with little understorey vegetation. The sites are not close stands of riparian forest along a watercourses located to the east and west of the sites; this Spotted Gum - Paperbark Forest is an endangered ecological community.

No threatened plant species occur on the site or adjacent to it, but a few listed animal species are likely to visit the local forests from time to time but would not rely upon them for their survival.

6 Recommendations

The following recommendations are aimed at reducing the potential impact of the development on flora and fauna.

1. It is **recommended** that the floodplain (riparian) forest be totally protected, both during the construction period and afterwards. To this end, it is **recommended** that clearing be minimised on the eastern side of Areas 2 and 4 and the western side of Area 3 to maximise the distance between the clearing and the floodplain forest (edge of the floodplain); the aim should be a minimum distance of 10 metres. It is further **recommended** that the batter in the southeast corner of the facility (Area 4) be designed to maintain a minimum distance of 10 metres from the edge of the floodplain forest and be outside the Environmental Protection zone boundary; these aims have been achieved (see **Figure 4**).
2. It is **recommended** that the large old tree with hollows in Area 3 be retained if possible; see location on **Figure 2**.
3. It is **recommended** that the two artificial ponds be protected from significant modification due to their potential habitat value for frogs, possibly including the Green and Golden Bell Frog; this includes excessive sedimentation during construction.
4. It is **recommended** that local indigenous plant species be utilised in the landscaping wherever possible.

7 **References**

Commonwealth of Australia (1999). *Environment Protection and Biodiversity Conservation Act, 1999*. Commonwealth Government, Canberra.

Department of Environment and Heritage (2005). EPBC Act – Principal Significant Impact, Guidelines 1.1. DEH, Canberra.

Kevin Mills & Associates (2007). Flora and Fauna Assessment, South Coast Correctional Centre, South Nowra, City of Shoalhaven. Prepared for BBC Consulting Planners, Broadway, October.

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New South Wales (1979). *Environmental Planning & Assessment Act, 1979*. NSW Government, Sydney.

New South Wales (1994). *Fisheries Management Act, 1994*. NSW Government, Sydney.

New South Wales (1995). *Threatened Species Conservation Act, 1995*. NSW Government, Sydney.

New South Wales (1995). *State Environmental Planning Policy No. 44 - Koala Habitat Protection*. NSW Government, Sydney.

Appendix 1

List of native plant species for the sites proposed for clearing

<i>Acacia falcata</i>	Falcate Wattle
<i>Acacia irrorata</i>	Green Wattle
<i>Acacia longifolia</i>	Golden Wattle
<i>Acacia stricta</i>	Straight Wattle
<i>Acacia ulicifolia</i>	Prickly Moses
<i>Allocasuarina littoralis</i>	Black She-oak
<i>Aristida vagans</i>	Three-awned Speargrass
<i>Billardiera scandens</i>	Apple Berry
<i>Brunoniella pumilio</i>	Dwarf Blue Trumpet
<i>Corymbia maculata</i>	Spotted Gum
<i>Cymbopogon refractus</i>	Barbed-wire Grass
<i>Cynodon dactylon</i>	Couch Grass
<i>Cyperus polystachyos</i>	Sedge
<i>Daviesia ulicifolia</i>	Gorse Bitter Pea
<i>Dianella caerulea</i>	Flax-lily
<i>Dianella revoluta</i>	Spreading Flax-lily
<i>Dichondra repens</i>	Kidneyweed
<i>Eleocharis sp.</i>	Spike-rush
<i>Entolasia stricta</i>	Wiry Panic
<i>Eucalyptus eugenioides</i>	Thin-leaved Stringybark
<i>Eucalyptus longifolia</i>	Woollybutt
<i>Eucalyptus paniculata</i>	Grey Ironbark
<i>Exocarpos cupressiformis</i>	Native Cherry
<i>Glycine sp.</i>	Glycine
<i>Hakea sericea</i>	Silky Hakea
<i>Hardenbergia violacea</i>	Native Sarsaparilla
<i>Juncus usitatus</i>	Common Rush
<i>Lagenifera stipitata</i>	Blue Bottle-daisy
<i>Leucopogon juniperinus</i>	Juniper Beard-heath
<i>Lissanthe strigosa</i>	Peach Heath
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
<i>Lomandra multiflora</i>	Many-flowered Mat-rush
<i>Lythrum hyssopifolia</i>	Hyssop Loosestrife
<i>Macrozamia communis</i>	Burrawang
<i>Melaleuca decora</i>	Paperbark
<i>Melaleuca linariifolia</i>	Narrow-leaved Paperbark
<i>Opercularia hispida</i>	Hairy Stinkweed
<i>Ozothamnus diosmifolius</i>	Everlasting
<i>Parsonsia straminea</i>	Monkey-rope Vine
<i>Persicaria decipiens</i>	Slender Knotweed
<i>Philydrum lanuginosum</i>	Frog's-mouth
<i>Pimelea linifolia</i>	Rice-flower
<i>Poa sp.</i>	Tussock Grass
<i>Podolobobium scandens</i>	Netted Shaggy Pea
<i>Pratia purpurascens</i>	Lobelia Pratia
<i>Pultenaea villosa</i>	Bronze Bush Pea
<i>Schoenoplectus validus</i>	River Club-rush
<i>Themeda australis</i>	Kangaroo Grass
<i>Typha orientalis</i>	Cumbungi
<i>Xanthorrhoea resinifera</i>	Grass-tree