Forestry Corporation Wildlife Reserve

The 2019-2020 wildfires burn out 2.4 million hectares of north-east NSW (north from the Hunter River), burning through around half the remnant native vegetation. These fires were unusually extensive and intensive because of record low rainfalls and extreme temperatures. The Spotted Gum forests of the Richmond River Lowlands, and the Koalas that inhabit them, were amongst the worst affected in north-east NSW.

The Forestry Corporation has commenced forestry operations in burnt forests in compartments 10-16 of Myrtle State Forest**.** A brief audit of those compartments found:

- patches of forest with both red gums and Coastal Grey box >30cm diameter (dbh) common, and thus likely to have supported resident Koalas before the fires
- few Small-fruited Grey Gum, emphasising the importance of all individuals of this key Koala feed tree resource
- Koala scats under 3 trees, and scratches on a number of trees, showing that Koalas survived the fires and indicating the presence of breeding Koalas
- to satisfy retention requirements for Wildlife Habitat Clumps the Forestry Corporation are protecting some of the most heavily burnt forests, with many dead trees, despite their relatively low wildlife values
- exclusion zones have not been applied to some 40 kilometres of mapped Class 1 drainage lines, some of which likely qualify as drainage lines and many of which likely qualify as drainage depressions, and thus require 10-20m exclusion zones
- ten log dumps are being constructed on Classified Class 1 drainage lines, along with a number of tracks, which pose significant erosion threats
- in many places the required exclusion zones around Classified Class 2, 3 and 4 Drainage Lines have not been fully applied.

The approved logging is adjacent to the 142,000 ha Banyabba Area of Regional Koala Significance (ARKS) that had 83% of its modelled 71,000 ha of 'likely' Koala habitat burnt in the 2019 wildfires, with the apparent loss of 80-90% of Koalas from burnt areas. Myrtle SF should be considered as part of that population.

The intent is to now cut down feed and roost trees in surviving pockets of Koalas, based on token changes to inadequate logging rules that do not contemplate such landscape impacts. As the loggers stumble about in the fire ravaged homes of these imperilled Koalas they have no idea of the damage they are doing and they simply don't care. The risks of their blundering into homes of Koalas barely surviving the fires and vital habitat needed for population recovery is too high.

The Banyabba Koala population was first affected by the Busby's Flat Fire, which reignited into the Myall Creek fire that burnt out this colony. Such extensive disturbance undermined the basic assumptions on which the Coastal Integrated Forestry Operations Approval (CIFOA) for Forestry Corporation's logging are based, notably that logging would only affect a small part of any landscape, and thus fauna populations, at any one time.

It is also apparent that the Forestry Corporation can not comply with many of the IFOA Conditions, such as those relating to pre-logging surveys for threatened plants and threatened fauna habitat, and those relating to dispersal of polluted stormwater, in a burnt environment. The EPA has thus exempted the Forestry Corporation from various IFOA Conditions and apply temporary "band-aid" solutions in an attempt to compensate for the reduced protection.

As recognised by the EPA website (accessed 10 April 2020) "*The Coastal Integrated Forestry Operation Approvals (IFOA) was not designed to moderate the environmental risks associated with harvesting in landscapes that have been so extensively and severely impacted by fire"*.

Condition 23.4 of the CIFOA states:

> *23.4 If applying a condition of the **approval** at a specific site would result in a poor environmental outcome, or if in a specific and unique circumstance **FCNSW** would not be able to comply with the conditions of the **approval**, then prior to commencing the relevant **forestry operation**:*
>
> > *(a) **FCNSW** may submit a report to the **EPA** in accordance with **Protocol 5: Approvals for restricted activities**; and*
> > *(b) the **EPA** may grant a **site-specific operating condition** in response to the report ...*

The Forestry Corporation submitted generic "tick-a-box" requests to the EPA to justify logging of a variety of burnt forests throughout north-east NSW, including for 5,000 ha of Koala habitat on the Richmond River lowlands in Myrtle, Bungawalbin and Doubleduke State Forests. The Myrtle request is at Appendix 1, and clearly shows the sham that these are. It is simply a list of unspecific and unjustified statements, with impacts on threatened species identified as being addressed in an *"operational plan"* which hadn't even been prepared at that time. Based on the provided responses there is no way the EPA can have given any of these issues due consideration.

Given the EPA's acknowledgement that the IFOA is no longer fit-for-purpose, they state "*This has required the EPA to issue additional site-specific conditions that tailor protections for the specific circumstances of these burnt forests*". The EPA have apparently undertaken no on ground assessment, and have refused my requests to reassess 2015 survey sites in nearby forests to quantify fire impacts on Koalas.

On the 3 March 2020 the EPA issued site-specific operating conditions for logging of burnt Koala habitat in **Bungawalbin State Forest**, Compartments BWN 001, 002, 003, 004, 005, **Doubleduke State Forest** compartments DOU001, DOU002, DOU003, DOU004, DOU005, DOU006, DOU007 and DOU008, and **Myrtle State Forest** compartments MYR010, MYR011, MYR012, MYR014, MYR015 and MYR016.

These were part of a tranche of generic site-specific requirements issued for Bagawa, Collombatti, Girard, Riamukka and Styx River State Forests. All based on similar requests from the Forestry Corporation.

NEFA prepared the report 'Saving Banyabba's Koalas' and wrote to Carolyn Walsh, Acting Chair, Environment Protection Authority Board on 12 April 2020, stating:

> *On behalf of NEFA, I request that the EPA immediately withdraw their approval for logging of burnt Koala habitat in Bungawalbin, Doubleduke and Myrtle State Forests, do due diligence by replicating the EPA's 2015 Koala surveys in Royal Camp and Carwong State Forests to quantify fire impacts on this population, undertake site surveys before approving any Koala habitat for logging, and provide meaningful protection for any Koalas found.*

The EPA Board have still not bothered to respond.

Based on the additional evidence presented herein NEFA still maintains that the EPA was reckless to approve the logging of these burnt forests, and if the EPA refuse to withdraw their approval, we request that they modify it.

Based on this Audit, NEFA recommends:

- **Independent ecologists be engaged by the EPA to identify the most appropriate areas for inclusion in Wildlife Habitat Clumps, Habitat Tree Clumps and temporary feed tree clumps.**
- **the EPA review the identification and buffering of stream classes, and particularly the identification and buffering of drainage depressions.**
- **A scat detection dog is used to undertake a thorough search for Koalas with a view to identifying and protecting remaining core Koala habitat.**
- **All remaining Small-fruited Grey Gum (*E. propinqua*) be protected from logging.**
- **All Coastal Grey Box (*E. moluccana)* over 30cm diameter (dbhob) be protected from logging.**

CONTENTS

1. Wildlife Habitat Retention Clumps

For the 2018 Integrated Forestry Operations Approval the Environment Protection Authority (EPA) decided to remove most threatened species surveys and species specific protection requirements and replace them with the retention of 5% of the net logging area as Wildlife Habitat Clumps. In return for removing protections for recruitment habitat trees and mature feed trees the EPA also required the putting aside of 5% of the logging area as Habitat Tree Clumps at Forester's discretion at the time of logging, and because of the fires, as a temporary measure 7% of the logging area as temporary feed tree clumps. As only Wildlife Habitat Clumps are identified on the harvesting plan, this review is confined to them.

The EPA's propaganda 'FAQ: Commencement of the Coastal IFOA, November 2018' claimed:

> *For the first time ever, the Coastal IFOA prescribes minimum thresholds for the permanent protection of threatened species across the landscape, as well as in each harvesting site. These permanent protections provide improved protection for native plants, animals and their habitat, streams and aquatic habitat,*
>
> *This approach ensures the maintenance of multi-aged forests across the landscape and the permanent retention of undisturbed habitat, providing areas of refuge, as well as connectivity and dispersal opportunities for native species.*
>
> *The Coastal IFOA moves away from survey driven approaches to koala protection, which have been shown to have limitations. Instead it will identify and protect places in the landscape where koalas are more likely to occur.*
>
> *Areas with important koala habitat will be prioritised for inclusion in new wildlife habitat and tree retention clumps – providing permanent protection for important koala habitat.*

The Coastal Integrated Forestry Operations Approval's 'Protocol 22: Wildlife habitat and tree retention clumps' identifies the range of features that should be considered when selecting appropriate clumps, including:

a. *existing hollow-bearing trees, nectar trees, Glider sap feed trees, Glossy Black-Cockatoo feed trees and giant trees;*
b. *potential future hollow-bearing trees;*
c. *previously protected habitat for subject species or threatened species;*
d. *carry-over exclusion zones;*
e. *dead standing trees and coarse woody debris;*
f. *rocky outcrops, cliffs, heath and scrub, wetlands and their associated exclusion **zones** located within the **base net area**;*
g. *areas subject to a species-specific condition or a species management plan exclusion zone;*
h. *areas where Koala browse prescription 1 or Koala browse prescription 2 would otherwise apply;*
i. *local populations of **threatened** or unusual **plants** (e.g. edge of range or locally uncommon);*
j. *mature forest **patches** and long-undisturbed forest **patches** (data sources – CRAFTI, **LIDAR**, targeted surveys);*
k. *rocky ground and valuable understorey **habitat** such as grass trees, fruiting and flowering shrubs, Allocasuarina stands (data sources targeted and previous surveys);*
l. ***habitat** connectivity to help improve landscape connections between other retained patches of vegetation or as **habitat** islands within a large cutover area (can be corridors or islands, both improve connectivity);*
m. *selection of **habitat** for regional priority **threatened species** and forest communities, or environmental features important within the **local landscape area**.*

*Note: **FCNSW** must consider regional **threatened species** and **habitat** priorities, as set out in accompanying guidance material, for the design of each **wildlife habitat clump**.*

This clause also identifies that FCNSW "*must maximise landscape connections between other retained patches of vegetation or as habitat islands within a large cutover area (for example, as either corridors or islands)*", and that FCNSW must give priority to "*establishing wildlife habitat clumps that include valuable habitat*".

The Forestry Corporation was requested to provide the shapefiles for Wildlife Habitat Clumps along with their selection criteria as an informal GI(PA) request, though they have yet to do so. Similarly they refused to provide the shapefiles and rationale for Habitat Tree Clumps selected up until that time, though it is evident that a number have been marked on the ground.

The problem with the wide range of criteria that can be counted towards the identification of Wildlife Habitat Clumps is that they are so broad that almost anywhere can qualify. This leaves it open for FCNSW to be able to select areas at their whim. While there is a partial intent to select "*mature forest **patches** and long-undisturbed forest patches"* and "*valuable habitat*", the reality is that when given a choice the FCNSW's priority is always to select the least valuable habitat from a timber perspective. Experience has proven that they will pick areas with the fewest loggable trees and lowest potential to provide such in the future as their primary criteria, even though these are not Protocol 22 criteria.

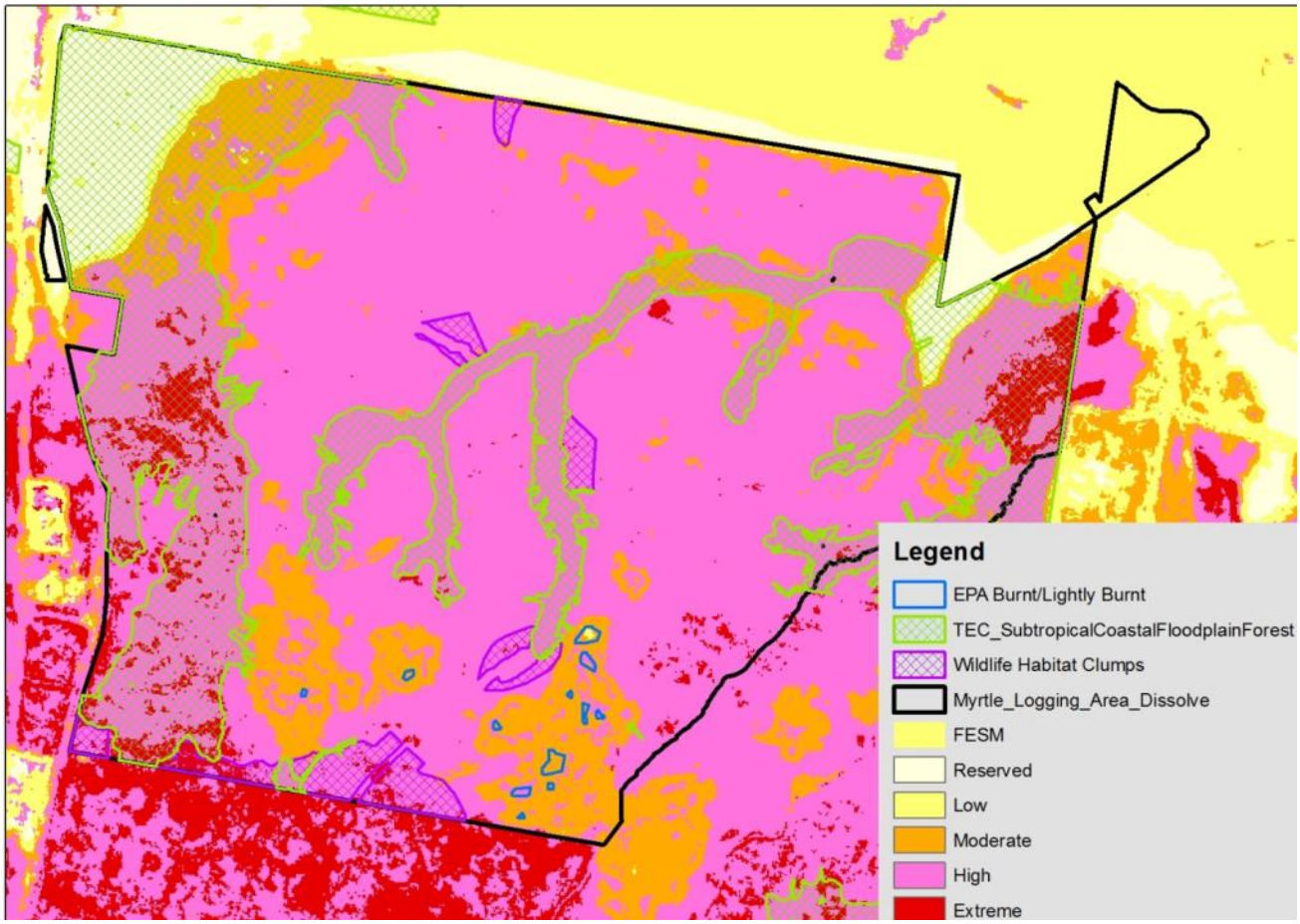
The EPA's site-specific operating conditions for Myrtle State Forest appear to indicate an intent to protect the least fire affected forests:

> *Prioritising wildlife habitat clumps and tree retention clumps*
>
> *12. When applying Protocol 22, FCNSW must prioritise the establishment of **tree retention clumps** and **wildlife habitat clumps** in **unburned areas** or **partially burned areas** or in areas with unburned **groundcover**, over other areas.*

The EPA (pers. com. 29 May 2020) identify

> *The 'unburned area' and 'partially burned area' maps that accompany site-specific conditions are derived from Department of Planning Industry and Environment's (DPIE) FESM. Where available, the 'unburned area' and 'partially burned area' data sets equate with FESM 'unburnt' and 'low' fire severity classes respectively.*
>
> *The state-wide version of FESM that is now available on the SEED portal may differ from the FESM derived 'unburned' and 'partially burned area' maps issued by the EPA. The EPA issued maps are based on a FESM product which best matches the period in which this area was burnt, using the most suitable post-fire imagery.*

So while I initially expected this to be a clause that required the protection of the least burnt forest, its narrow definition means this is not the case. Within the net logging area south of Harpers Road, the EPA show only some 4ha in 12 tiny patches (600-11,000m^2), and none of these were selected for inclusion in Wildlife Habitat Clumps.

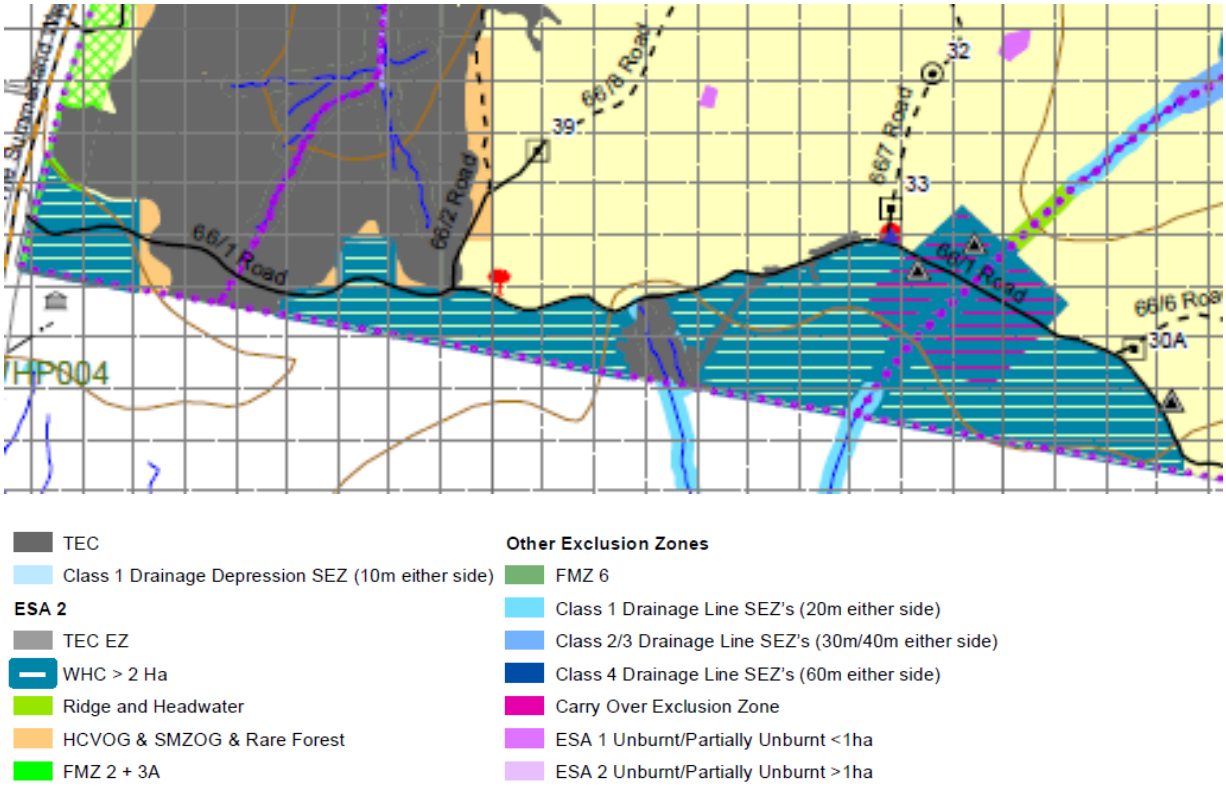


DPIE **Fire Extent and Severity Mapping FESMv2.1** (April 2020) canopy burn mapping, overlaid with the EEC Subtropical Coastal Floodplain Forest (the most extensive area required to be protected) and the Wildlife Habitat Clumps. EPA burnt and partially burnt areas are only shown for within the net harvest area south of Harpers Road. The 'extreme' canopy loss class (red) has resulted in widespread deaths of trees, while the 'high' class has been variably affected and resulted in loss of some trees, though most canopies are recovering. Note the group of Wildlife Habitat Clumps along the southern boundary encompass 64% of these permanent exclusions as well as a significant proportion of the extreme canopy loss class (where most trees have been killed), with the balance suffering high canopy loss (where some trees have been killed).

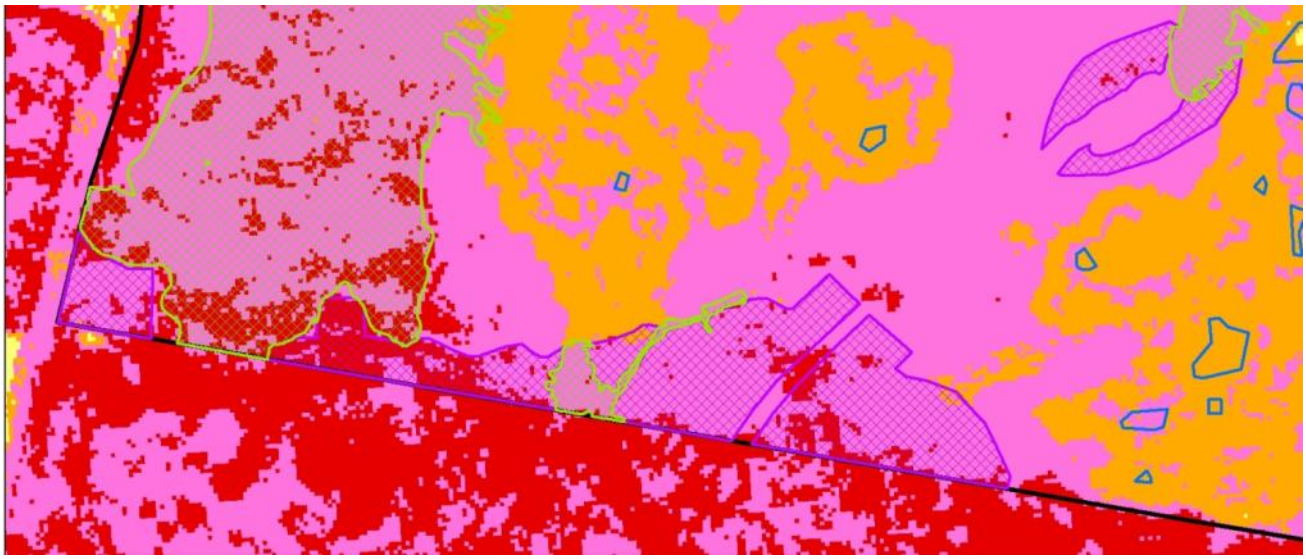
It is apparent that the EPA's tiny exclusions occur within larger areas that have only suffered moderate canopy loss, that should have been considered as a higher priority for reservation. Though none of these forests are included in Wildlife Habitat Clumps.

The EPA's mapping is nonsensical in that they have apparently identified individual trees and clumps of trees as unburnt within the area of least affected forests and are now only require these small clumps to be protected from logging irrespective of their context, meanwhile they are allowing the Forestry Corporation to chose the most heavily burnt forests, including where most trees have been killed, for permanent protection in Wildlife Habitat Clumps.

On Sunday 24 May 2020 the largest group of Wildlife Habitat Clumps (WHCs) along the southern boundary of Myrtle SF was inspected. This encompasses some 36 ha, around 64% of all WHCs. It satisfies criteria in that it includes a 6ha patch previously protected as an exclusion zone for Squirrel Gliders, which also has records of Glossy Black Cockatoos, and links patches of the Threatened Ecological Community (TEC) Coastal Subtropical Floodplain Forest. In all other respects it is totally inappropriate as it is mostly of low conservation value because it was heavily burnt in the 2019 fires, with extensive death of trees.



Excerpts from Harvesting Plan showing southern Wildlife Habitat Clumps. Note the carry over Squirrel Glider exclusion area (pink stripes) and patches of the TEC Coastal Subtropical Floodplain Forest. While theoretically this may appear a good choice, the reality is totally different as much of it was killed in the fires.



Detail of above, showing Wildlife Habitat Clumps overlaid over canopy burn, with the addition of EPA unburnt and lightly burnt patches. Things to note are that:

- the WHCs incorporate the most heavily burnt forests (outside the TEC exclusion).
- while DPIE have mapped extensive areas as moderately affected, the EPA's tiny patches are apparently single trees or small groups of trees, with patches as small as 600m^2, and only one patch over a hectare, none of these least affected forests have been included in WHCs.

PHOTOS OF THE SOUTHERN WILDLIFE HABITAT CLUMPS THAT THE FORESTRY CORPORATION HAVE IDENTIFIED AS BEING OF SUCH OUTSTANDING CONSERVATION VALUE TO WARRANT PROTECTION IN PERPETUITY.

THEIR VALUE IS THAT THEY HAVE NO TIMBER VALUE BECAUSE MOST TREES HAVE BEEN KILLED. THIS IS BEING PROTECTED INSTEAD OF REQUIRING SURVEYS TO IDENTIFY LOCATIONS OF THREATENED SPECIES AND EXCLUDING LOGGING FROM AROUND THEM, INCLUDING KOALA HIGH USE AREAS. NOW FORESTRY CAN JUST PICK THE AREAS WITH NO TIMBER RATHER THAN HAVING TO LOOK BEFORE THEY LOG.

The southern group of WHC's include the previous Squirrel Glider exclusion, though outside this they are a extremely poor choice of areas to permanently protect for wildlife as they are mostly dead. It is apparent that the only criteria used to select these areas for retention was the lack of any timber value. This cynical exercise is a poor precedent for implementation of 'Protocol 22'.

Ecologist David Milledge inspected this area (Appendix 2) noting:

> *The selection of this area as WHC appears to be completely contrary to the intent of the protocol and is unlikely to provide any of the habitat attributes the protocol was designed to protect, even providing it remains relatively undisturbed, for one to two decades or more. With regard to hollow-bearing trees, this is unlikely to be achieved for a minimum 100 years.*

Large parts of the central Wildlife Habitat Clump to the south-east of log dump 10 is comprised of young regrowth with few mature trees, another cynical choice.

Central Wildlife Habitat Clump

It is apparent that the Forestry Corporation's primary criteria for the selection of Wildlife Habitat Clumps has been to minimise timber losses.

Area of 'moderate' canopy loss, not proposed for protection.

It is recommended that independent ecologists be engaged by the EPA to identify the most appropriate areas for inclusion in Wildlife Habitat Clumps, Habitat Tree Clumps and temporary feed tree clumps.

2. Protecting Drainage Lines

Exclusion zones around streams are determined by classes of 'drainage lines' mapped some years ago from LiDAR. The data layer 'Classified Drainage Line' is an IFOA regulatory layer, yet the Forestry Corporation have removed most Class 1 drainage lines, redrawn and reclassified drainage lines, and sited roads and log dumps on top of them. The multitude of changes are astounding.

The Forestry Corporation has removed all protection from some 40 kilometres of mapped Class 1 drainage lines, and 1 kilometre of Class 2 and 3 drainage lines within the net logging area . From our limited assessments it is conceded that most of these Class 1 drainage lines may not constitute 'drainage lines' within the meaning of the IFOA, though it is also apparent that some do. Many of the deleted Class 1 drainage lines likely constitute drainage depressions within the meaning of the IFOA and thus still require exclusion zones.

While, by their nature, the mapped drainage lines are depressions in the landscape, they are often minor, though they are interspersed with distinct and obvious depressions where water pools. **The key question is whether these intermittent obvious depressions where water pools, and the linking flow paths, on mapped Class 1 drainage lines constitute 'drainage depressions' within the meaning of the IFOA and thus warrant 10m exclusion zones.**

The 'Coastal Integrated Forestry Operations Approval – Conditions', 'Division 3 – Riparian protection' specifies the required buffers for drainage lines. These are identified as "drainage depression", "unmapped drainage line" and classes 1-4 "classified drainage lines".

Presumably because of the higher risk of erosion from burnt ground (with most leaf litter lost), reduced effectiveness of burnt riparian buffers and thus far higher risk of stream pollution, the EPA's site-specific operating conditions for Myrtle State Forest have increased protection for headwater streams:

> *Adjusted riparian protection*
>
> *38. Despite any condition to the contrary in the **approval**, and to replace the **riparian exclusion zones** in Tables 6a and 6b of the **approval** to the extent of any inconsistency, a **riparian exclusion zone** with a minimum width as specified in **Table 1** below must be retained on each side, and for the entire length of, each of the drainage categories listed in column one of the table.*

Table 1

Drainage Category	**Riparian Exclusion Zone**	
	Minimum width of ***riparian exclusion zone*** (metres)	ESA Category
Drainage depression (***mapped*** or ***unmapped***)	10m, unless otherwise approved by the ***EPA***	***Category 2 ESA***
Unmapped drainage lines	20m	***Category 2 ESA***
Class 1 ***classified drainage line***	20m	***Category 2 ESA***
Class 1 ***classified drainage line*** within ***class 1 aquatic habitat***	20m	***Category 2 ESA***
Class 2 ***classified drainage line***	30m	***Category 2 ESA***
Class 3 ***classified drainage line***	40m	***Category 2 ESA***
Class 4 ***classified drainage line***	60m	***Category 2 ESA***

A classified drainage line is defined as:

> *A drainage line classified according to Protocol 19: Determination of drainage class and stream order and mapped in the 'Classified_Drainage_Line' spatial dataset derived using LiDAR data.*

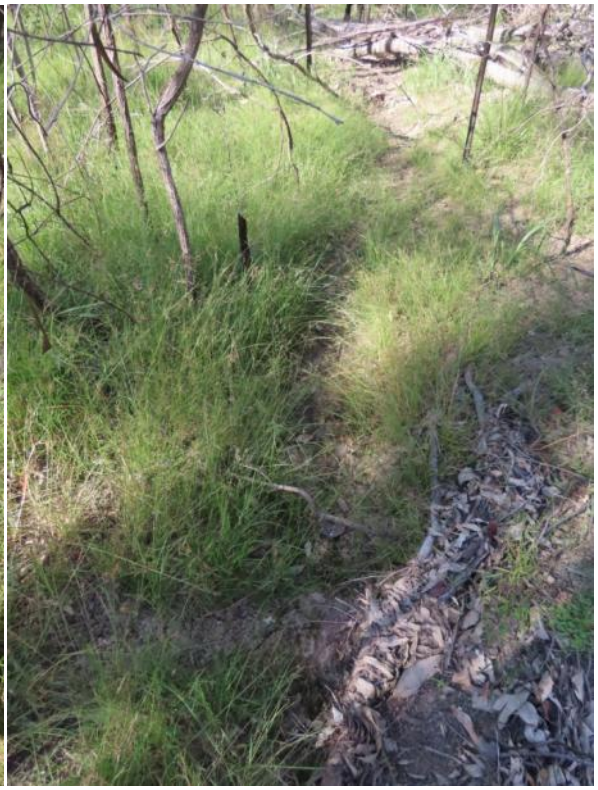
While the IFOA Conditions require riparian exclusion zones to be applied to mapped drainage lines, the IFOA Protocol 16 limits this to "*commence from the channel head for a class 1 classified drainage line ... as determined in the field*". Protocol 19 further qualifies this: "*The headwater or point of origin of a class 1 classified drainage line may extend beyond or fall short of the mapped drainage line and must be verified in the field*".

It is apparent that this qualification only applies to Class 1 drainage lines, meaning other classes presumably have to be applied as mapped.

NEFA obtained a copy of the 'Classified Drainage Line' shapefile off EPA during public exhibition of the final IFOA, which included the drainage line classes. We also downloaded the IFOA data set from the Forestry Corporation site, which includes the identical shapefile 'Classified Drainage Line', except that Forestry Corporation employee Rob Kirwood has deleted all the stream classes.

Something has happened in the translation of this agreed data set to the harvesting plan, most Class 1 classified drainage lines have been deleted, a number of Class 2 drainage lines have been demoted to Class 1, and most strangely many of the streams and their accompanying buffers have been redrawn, in places following compartment boundaries rather than streams, in others joining parts of different streams into new ones, and in others just making new ones.

One deleted Class 1 drainage line within the Wildlife Habitat Clump to the south-east of log dump 10 was incidentally observed on 29 May to comprise an obvious drainage line with a distinct channel. This was not followed to the channel head, though there can be no doubt that there is one upstream. While it is otherwise protected within the exclusion area it was wrongly deleted. Given that its 20m buffer is not part of the net harvest area it should not have counted as part of the exclusion area, this Wildlife Habitat Clump requires revision. This omission suggests that they are others.



Deleted Class 1 Drainage line with obvious and distinct channel (6770856 501374)

One area of deleted Class 1 Drainage Lines to the north-west of log dump 32 was briefly inspected. on the 24 May. The area was fairly flat with dense grass growth since the fires, making it hard to distinguish drainage lines, in a number of places only grass-free short sections with an obvious flow path and numerous depressions where water pools were evident, in others the drainage line was readily discernible by bare ground, sediment movement, leaf accumulation, and erosion. In this area there were not defined stream banks, though the mapped drainage lines represented flow paths, with some more obvious than others.

LEFT: Mapped Class 1 Drainage Line (6768916 500872) in the process of having log dump 32 constructed over it. RIGHT; Mapped Class 1 Drainage Line (6769082 500728), with evident drainage depression.

Class 1 Drainage Line (6769199 500713), note leaf accumulation and deposition.

LEFT: Mapped Class 1 Drainage Line (6769141 500720) with drainage depression. RIGHT: Mapped Class 1 Drainage Line (6769158 500711). Note drainage depressions and erosion beneath log.

While it is evident that at this site there are definitional issues, it is apparent that the drainage lines, while indistinct in places, are mostly correctly mapped. The definition of drainage line requires "evidence of active erosion or ‘deposition’, e.g. gravel, pebble, rock, sand bed, scour hole, nick points", as well as the identification of the 'channel head'. Because of the flatness of the terrain, by this definition drainage lines were not readily discernible in many places.

The further question is therefore whether the mapped drainage lines represent 'drainage depressions', at least in part. While, by their nature, the mapped drainage lines are depressions in the landscape, they are often minor, though they are interspersed with distinct and obvious depressions where water pools. A drainage depression is defined as:

> *A feature that is a level to gently inclined shallow, open depression with a smoothly concave cross-section, rising to moderately inclined hillslopes.*

The key question is whether these intermittent obvious depressions where water pools, and the linking flow paths, on mapped Classified Class 1 drainage lines constitute 'drainage depressions' within the meaning of the IFOA and thus warrant 10m buffers.

The Harvest Plan doe include mapping of some 5 drainage depressions, one of which is a classified Class 2 drainage line. It is considered that this grossly under-represents the extent of drainage depressions.

The nub of the issue is whether logging of these drainage lines and their buffers is likely to result in the transport of suspended sediment into streams, and the answer is definitely yes.

A preliminary assessment indicates that by making these changes the Forestry Corporation have removed all protection from some 40 kilometres of mapped Class 1 drainage lines, and 1 kilometre of Class 2 and 3 drainage lines outside other exclusions. It is maintained that some of these should have been retained as drainage lines or drainage depressions, and had the appropriate riparian exclusion zones applied. This has potentially made significant areas of what should have been riparian exclusion zones available for logging. The omissions of required exclusion zones around drainage depressions and drainage lines has ramifications for the identification of 'ground protection zones'. The other affect is that significant parts of Wildlife Habitat Clumps, and likely other exclusions, are potentially comprised of areas that should not count as they may already be required to be protected as part of the net harvest area, meaning that additional areas would have to be protected to meet those requirements.

It is recommended that the EPA review the identification and buffering of stream classes, and particularly the identification and buffering of drainage depressions.

Ten log dumps are being, or intended to be, constructed on Classified Class 1 streams:12, 17, 18, 21, 23, 26, 29, 32, 37, and 38. As identified above it is considered that some of these are likely to qualify as drainage depressions and thus require 10m exclusion zones, and the EPA's site-specific operating conditions for Myrtle State Forest require:

> *Log dumps*
>
> *51. Despite condition 107.2 of the* ***approval****, each* ***borrow pit****,* ***gravel pit*** *and* ***log dump*** *must be located at least 20 metres from the outer edge of any* ***riparian exclusion zone*** *or* ***ground protection zone*** *on a class 1* ***classified drainage line*** *or class 2* ***classified drainage line****.*

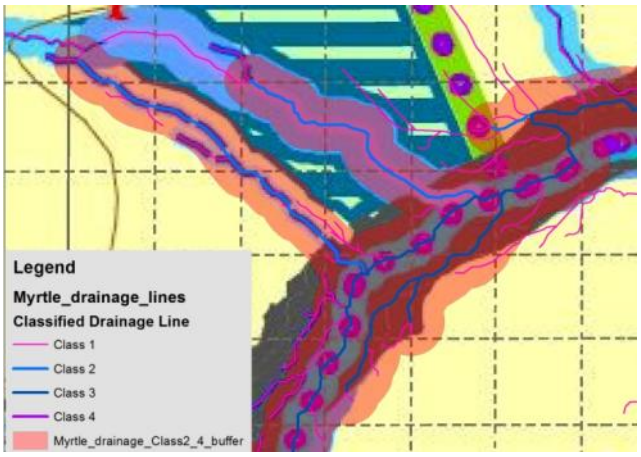
It is considered that a number of the log dumps are likely to be improperly situated on drainage depressions, and possibly drainage lines. Irrespective of definitions it is sheer folly to establish log dumps on Classified Class 1 drainage lines because of the high risk of polluted runoff directly entering into streams.

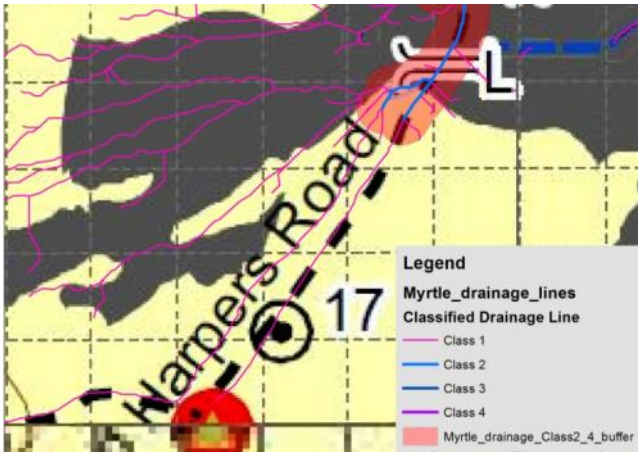
The excerpts from the harvesting plan below have classes of 'Classified Drainage Line' overlaid, along with the prescribed exclusion zones for Classified Class 2,3 and 4 Drainage Lines. They are examples of the Forestry Corporation's exclusion of Classified Class 1 Drainage Lines and exclusion zones, failure to apply the required exclusion zones to Classified Class 2,3 and 4 Drainage Lines, and construction of log dumps and roads on Class 1 drainage lines.

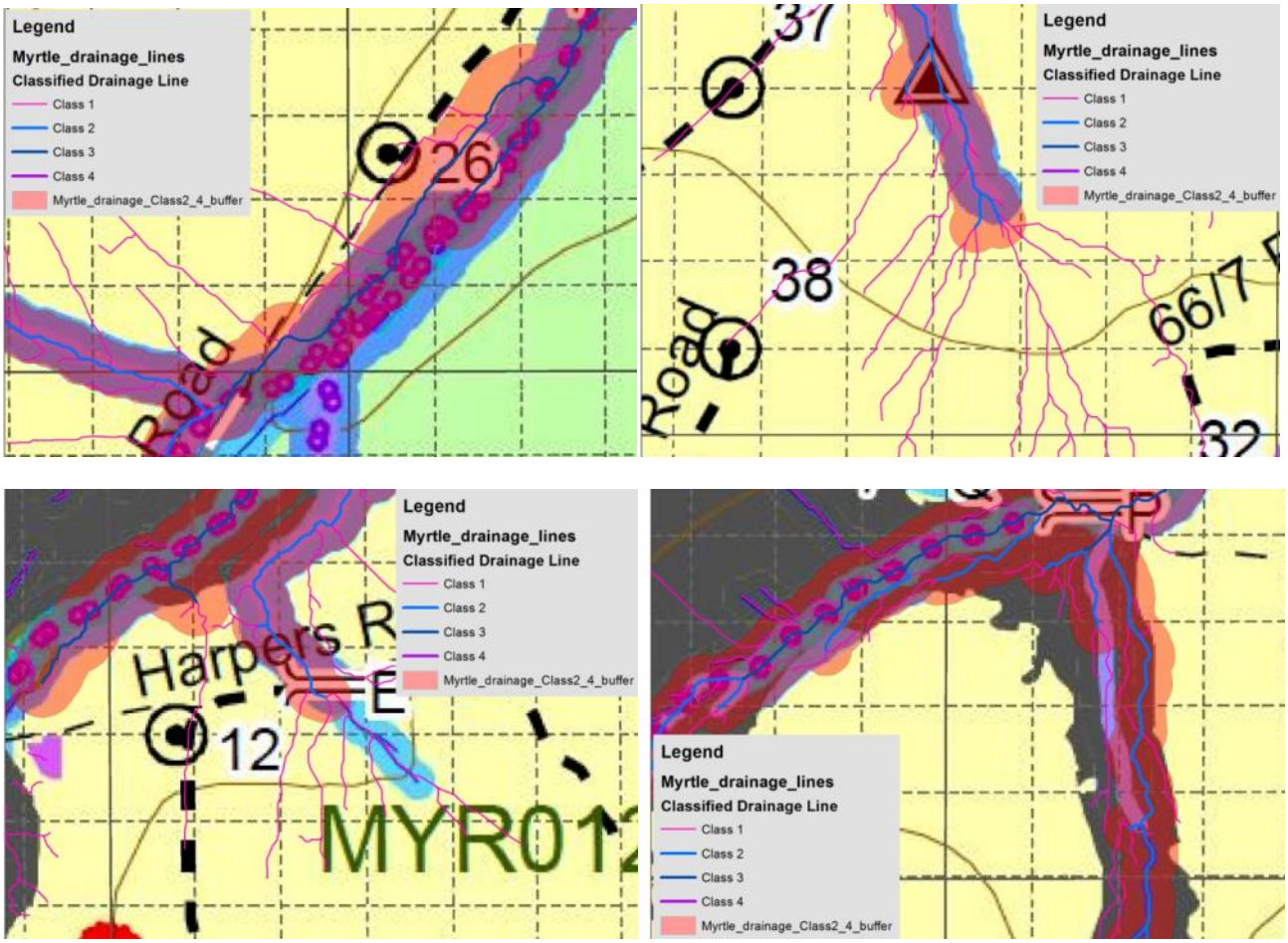
Aside from the above problems, these also show that the required exclusion zones for Class 2, 3 and 4 streams have not been properly applied, with the required exclusion zones (light pink) extending well outside the exclusion zones identified on the harvesting plan. Overall some 7-8ha has been wrongly omitted from exclusion zones.

Along with any omissions from Class 1 drainage lines, this affects calculations of the net harvest area.

EXAMPLES OF INAPPROPRIATE TREATMENT OF STREAMS







Extracts from Harvesting Plan overlaid with 'Classified Drainage Lines' and prescribed exclusion zones for Classified Class 2, 3 and 4 Drainage Lines. These show that most Classified Class 1 Drainage Lines have no protection, with roads and log dumps proposed for construction upon them, and that in many places (light pink) the required exclusion zones around Classified Class 2,3 and 4 Drainage Lines have not been applied. (Please see the Operational Plan map for a key to the underlying map)

3. Koalas

The Myrtle Koalas will have been significantly affected by past logging removing the larger feed trees they prefer, and the reduction in the variety of feed trees available. Many parts of the forest are likely to have had limited resources for Koalas before the fires. The 2019 fires have dramatically increased the impacts on Koalas, likely killing all Koalas in the extreme canopy loss class (where most trees have been killed), with most Koalas likely being lost from the worst affected high canopy loss class.

NEFA have found post-fire Koala scats under 3 trees from brief searches, showing that some Koalas have survived the fires. The findings indicate that there core groups left. All survivors are essential to rebuild the heavily depleted Banyabba population.

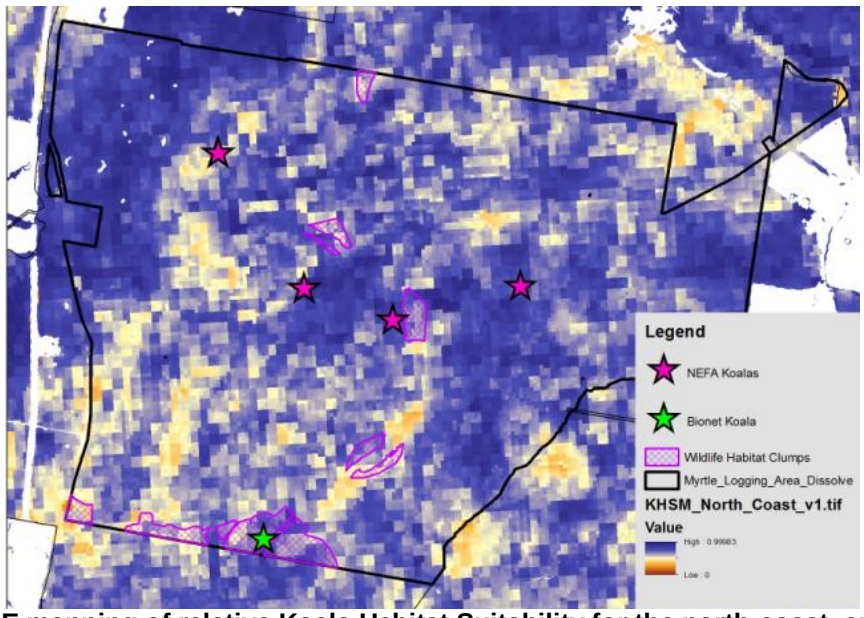
The status of the Banyabba Koala Area of Regional Koala Significance (ARKS) has been previously documented in NEFA's report Saving Banyabba Koalas. In summary it is concluded:

> *Before the 2019 fires, Koalas across the Banyabba ARKS had been assessed as being in rapid decline (White et. al. 2015, Phillips and Weatherstone 2015). Within the area assessed*

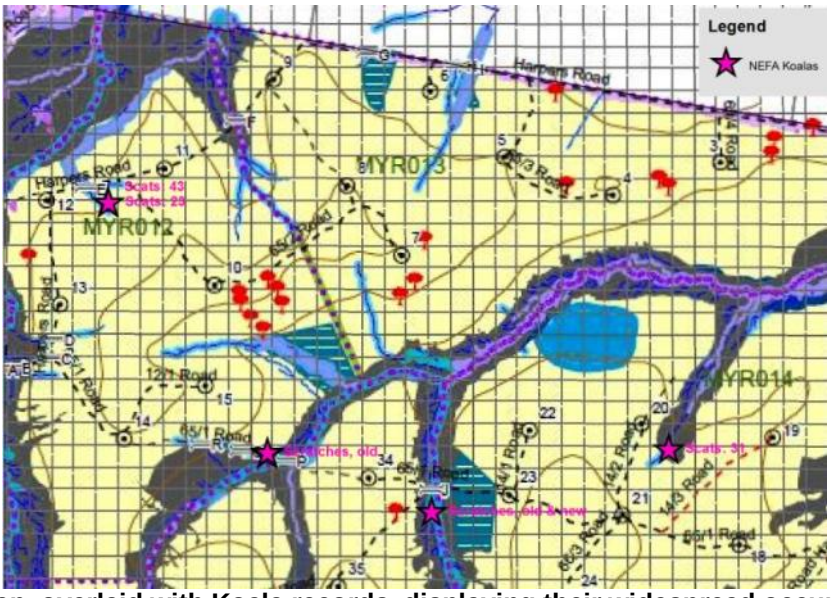
by NEFA there was estimated to be a loss of around 90% of Koalas from the forests burnt in the 2019 fires. This indicates the loss of some 75% of Koalas from the remnant Banyabba population

It is now evident that across extensive areas of the Banyabba ARKS that most Koalas have been killed, and that on heavily burnt sites a high proportion of trees have been killed, causing long-term degradation of Koala habitat and significant loss of current and future timber resources.

The Department of Planning, Industry and Environment (DPIE) has mapped likely Koala habitat across the north coast as part of the Koala SEPP. This is taken to be equivalent to Classes 4 and 5 of their Koala Habitat Suitability Model. This identifies significant areas of likely Koala habitat within the logging area.



Map showing DPIE mapping of relative Koala Habitat Suitability for the north-coast, overlaid with Koala records. Note that the pre-existing 2018 Koala record is in an area severely burnt where all Koalas are likely to have been killed.



Harvesting Plan Map, overlaid with Koala records, displaying their widespread occurrence. Far more work is required to identify the core habitat essential for their ongoing survival and recovery.

NEFA have so far only undertaken very limited searches for Koalas involving a few random meanders undertaking brief surface scans around the base of trees. These have found widespread usage by Koalas as evidenced by distinctive scratches and Koala scats found at four dispersed sites with brief searches. Though Koalas are apparently at low densities, which is to be expected given the extensive burning of the forests.

LEFT: Old and post fire Koala scratches on Red Gum (6770208, 501820) indicating the presence of a Koala both pre and post fire, one of a number of trees in his locality found with Koala scratches from a brief look. RIGHT: 31 Koala scats under Red Gum

LEFT: Old Koala scratches on Grey Gum (6770474, 501079). RIGHT: 23 Koala scats under Spotted Gum (6771598, 500365)


43 Koala scats under Red Gum and scratches on recently exposed bark (6771598, 500360). The different sized scats indicate two adult Koalas and possibly a joey. These are likely a few weeks old and are post fire.

In all their years of managing this forest the Forestry Corporation have only ever recorded a single scat from a Koala in 2018 within this part of Myrtle SF. It is once again astounding that with limited searching NEFA have been able to identify more Koala scats, after Koala's have been decimated by a fire, than the Forestry Corporation were able to do in their pre-fire surveys.

It is apparent that significant parts of the forest are dominated by Spotted Gum and Ironbark with few feed trees. The low lying areas, particularly on the floodplain, are dominated by the red gums Forest Red Gum (*E. tereticornis)* and Slaty Red Gum (*Eucalyptus glaucina)*, favourite Koala feed trees, which are also patchily distributed through the Spotted Gum stands. Coastal Grey Box (*E. moluccana)*, another key feed tree, is more patchily distributed, being common in some areas and rare in others.

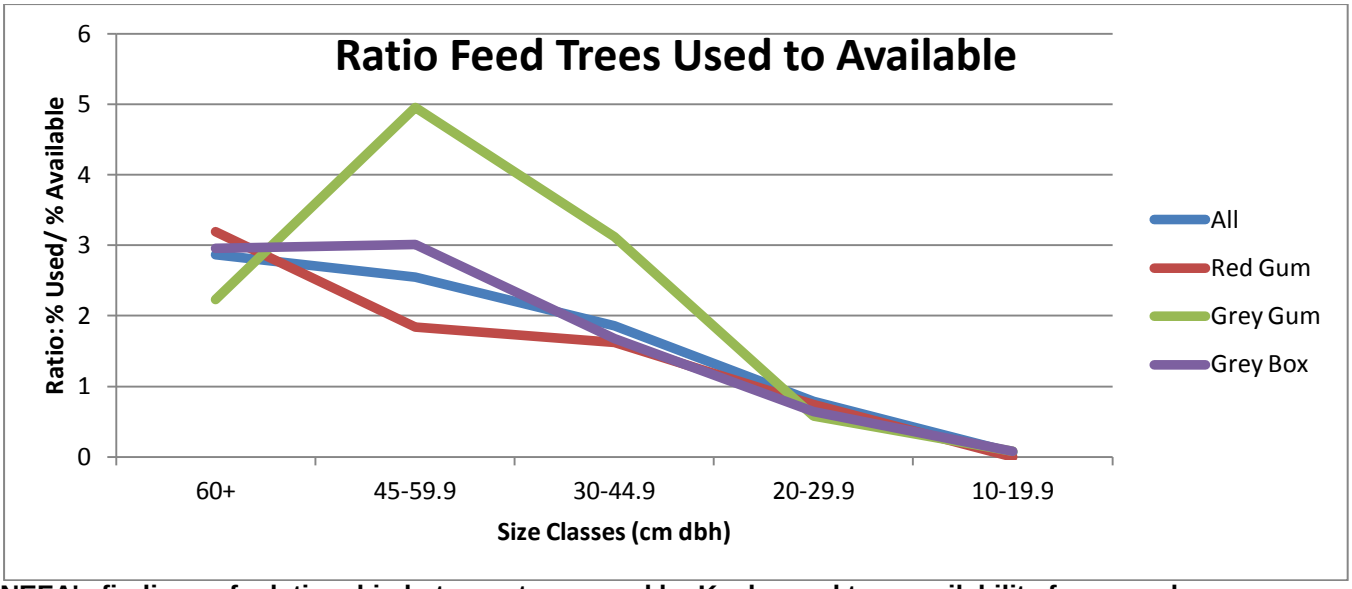
The third key Koala feed tree in these forests is Small-fruited Grey Gum (*E. propinqua*), which has been rare in the areas inspected. NEFA have found Grey Gum to be a particularly important feed tree as it is used disproportionally more than what would be expected from its distribution. The relatively low numbers of Grey Gums in these forests is likely a limit on Koala populations.

Food tree diversity in an area has been identified as an important influence on Koala presence. In these forest types Koalas have been found to prefer areas with at least two feed trees. In their review of variables affecting Koala distribution, the EPA (2016) found:

> *Limited areas of higher koala activity corresponded with; a higher abundance and diversity of local koala feed trees,*

Many studies have identified the Koala's preference for larger trees (i.e. EPA 2016). Tree size has been found to be the most significant variable after tree species in a number of studies, though this seems to be often ignored or downplayed for resource and political reasons.

From NEFA's results in nearby forests, aside from species, the most obvious influence on tree usage by Koalas is tree size. Of the 475 trees found to be used by Koalas, 85% were 30cm diameter (dbh) or larger. Despite being most abundant, trees under 20 cm diameter (dbh) comprised only 2.7% of trees used. Overall tree usage increased with tree size relative to tree availability.



NEFA's findings of relationship between trees used by Koalas and tree availability from nearby forests.

NEFA's findings support the EPA's (2016) findings for Royal Camp and Carwong State Forests that found a strong positive relationship between the size class of feed trees and usage by koalas, noting "*Analysis of size class data for Carwong, Royal Camp and Clouds Creek indicate that koalas preference for utilisation of feed trees by koalas is towards larger trees (higher diameter at breast height >30 centimetres)*".

The years of logging have run down the sizes of trees in these forests and thus had a significant impact of Koala populations.

The 2019 fires have had a dramatic affect on the remnant Koalas inhabiting these forests. Many trees were killed, though particularly important for Koalas it appears that most trees were defoliated, leaving those Koalas that weren't killed by the fires with little to eat. Judging by nearby forests 80-90% of the Koalas inhabiting these forests are likely to have been killed during and after the fires. In most of the area the canopy is recovering and again providing browse for Koalas. Though it will take a long time for Koalas to recover, particularly if the larger feed trees they need are logged.

The finding of three Koala high use trees from NEFA's brief searches is evidence that Koalas have survived the fire and indicates that it is likely that core occupied habitat remains, at least in parts of the less intensively burnt forests.

While nearly all these forests were burnt to some extent, it is apparent that Koalas have survived the fires, most likely in areas of suitable habitat with the least canopy loss. Their continued survival depends on identifying and protecting remnant colonies, while also protecting areas of suitable habitat for them to expand back into. This necessitates searching for such patches and protecting them from logging, to provide both browse and roost trees (it is evident that they also use select Spotted Gum, probably primarily for roosting).

Across the logging area the logging rules require larger (>30cm diameter) Red Gum to be protected from logging (because many are the Vulnerable Slaty Red Gum), though to provide the variety of browse Koalas need all Grey Box and Grey Gum also need to be retained across the logging area.

If there is a desire to save this Koala population, it is recommended that:

- **A scat detection dog is used to undertake a thorough search for Koalas with a view to identifying and protecting all remaining core habitat with surviving Koalas.**
- **All remaining Small-fruited Grey Gum (*E. propinqua*) and all Coastal Grey Box (*E. moluccana)* over 30cm diameter (dbhob) be protected from logging.**

Appendix 1: Forestry Corporation request for approval to log burnt forests in Myrtle State Forest.

APPROVAL FOR RESTRICTED ACTIVITES REPORT

Protocol 5 of the 'Coastal Integrated forestry Operations – Protocols' outlines the requirements for approval of specific restricted activities. Prior to a restricted activity being undertaken this report must be completed and approved by the body or person specified in Table 1 Protocol 5.2 (1).

Plan Information & Location of Restricted Activity	
State Forest:	Myrtle
Compartments:	MYR010, MYR011, MYR012, MYR013, MYR014, MYR015, MYR016 (Old Compartments 65, 66)
Grid Reference (MGA):	N/A
Location Description:	Myrtle State Forest compartment MYR010, MYR011, MYR012, MYR013, MYR014, MYR015, MYR016
Exclusion Zone at Location:	N/A

Approval Body / Person: *To be determined from Table 1 Protocol 5.2 (1)*	
Restricted Activity:	Special provisions requiring a site specific operating conditions
Reference in approval or protocol:	**Condition 23.4**
Approval body/person:	☒ EPA

Protocol 5.3 (3) (b) & Protocol 5.3 (3) (c) - Report Requirements	
(B) Details of the restricted activity:	N/A
i. description of the restricted activity: (eg construction or upgrade of a road, track or crossing through category 1 ESA)	N/A
ii. reasons why the restricted activity must be conducted:	Critical for timber supply
iii. details of all other options that were	This option has been short listed in consultation with the EPA

considered, including the cost of those other options and the reasons why the selected option or route was chosen and why each other option or route was not:	
iv. the mitigation and ameliorative measures to be applied:	Mitigations to be agreed with the EPA
(C) Details of the proposal and field assessment, including:	
i. the dimensions of the area that will be affected by the restricted activity:	Various parts of the compartments identified
ii. the work proposed to be undertaken to carry out the restricted activity, including the method of road or crossing construction (if applicable):	Pre-harvest searching, surveys, harvesting, roading and identified regeneration works.
iii. results of a survey for any subject species and habitat features conducted in accordance with Protocol 20: Pre-operational surveys, which includes traversing the proposed area of disturbance of the restricted activity at an average speed no greater than one kilometre per hour.	As detailed in operational plan
iv. an assessment and description of any threatened species, subject species or any habitat that will be or are likely to be directly or indirectly affected by the restricted activity or occur within 50 metres of the restricted activity;	As detailed in operational plan
v. the potential impacts of the restricted activity either directly or indirectly on any threatened species, subject species or habitat, including aquatic habitat, wetlands, waterbodies and threatened species habitat (for example, the creation of a barrier to movement, increasing threats):	Low risk with implementation of agreed mitigations
vi. an assessment of past disturbance in the proposed area of the restricted activity.	Regrowth forest subject of several selective harvesting operations historically.

Appendix 2. Report on southern Wildlife Habitat Clump by David Milledge

Assessment of part of an area of WHC (wildlife habitat and tree retention clumps) in Compartment 11, Myrtle State Forest on 24 May 2020

While in Myrtle State Forest on 24 May 2020, an assessment was undertaken of part of an area on the southern boundary of Compartment MYR011 (south of 66/1 Road) designated as WHC (reserved for the protection of wildlife habitat and tree retention clumps).

The WHC prescription (Protocol 22), as applied under site-specific operating conditions for Myrtle State Forest compartments burned by wildfire in late 2019, states that priority must be to establish WHC in **unburned areas** or **partially burned areas** or in areas with unburned **groundcover** over other areas.

However, the WHC area in the southern section of Compartment MYR011 exhibited none of these specified characteristics and appeared to represent the most extensively and intensively burned section of the compartment. In the area inspected, most trees were dead or dying, stags and old trees had been partly or completely incinerated, there was an almost complete lack of unburned original canopy foliage, no hollow-bearing trees were observed, there was a proliferation of wattle *Acacia* sp. regeneration, there were large patches of bare, burned ground and other areas of burned ground had been colonised by weed species such as Inkberry *Phytolacca octandra* and Fireweed *Senecio madagascariensis* (**Photos 1-6**).

The selection of this area as WHC appears to be completely contrary to the intent of the protocol and is unlikely to provide any of the habitat attributes the protocol was designed to protect, even providing it remains relatively undisturbed, for one to two decades or more. With regard to hollow-bearing trees, this is unlikely to be achieved for a minimum 100 years.

An example of the lack of appropriate attributes was the absence of Black Oak *Allocasuarina littoralis*, as all trees observed within the WHC area were dead. Although numerous seedlings were observed as a component of regeneration in the area, these are unlikely to provide a food resource for the specialised, threatened Glossy Black-cockatoo *Calyptorhynchus lathami* for 15 years or more. Records indicate that Compartment MYR011 and adjoining Compartment MYR015 were probably important foraging areas for the Glossy Black-cockatoo prior to the fire.

Similarly, important nectar (producing) trees such as Broad-leaved Ironbark *Eucalyptus fibrosa* and Forest Red Gum *E. tereticornis* were predominant among the dead and dying trees in the compartment and were only regenerating from root stock. Such regeneration would be unlikely to be of use to threatened nectarivorous vertebrates such as the Little Lorikeet *Glossopsitta pusilla*, Regent Honeyeater *Anthochaera phrygia*, Squirrel Glider *Petaurus norfolcensis* and Yellow-bellied Glider *P. australis* for at least a decade.

In contrast to the condition of the WHC area, observations in the majority of the remainder of Compartment MYR011 showed that this was much less severely burned and of considerably greater wildlife habitat value (**Photos 7-9**). Numbers of hollow-bearing trees, including old-growth Forest Red Gums and many mature vertebrate-attractive, nectar-

producing trees, comprising Red Gums, Large-leaved Spotted Gums *Corymbia henryi* and Broad-leaved Ironbarks were present in relatively undamaged condition post-fire. It is difficult to understand why forest stands or clumps with these characteristics were not selected within Compartment MYR011 to fulfil the requirements of Protocol 22 instead of the designated area of WHC which appeared to contain none.

David Milledge

27 May 2020

Photo 1 High-intensity burned forest in the southern WHC area in Compartment MYR011 showing complete loss of original canopy foliage, dead and dying trees, a lack of hollow-bearing trees and widespread dense wattle regeneration

Photo 2 High-intensity burned forest in the southern WHC area in Compartment MYR011 showing an incinerated stag, dead and dying trees, a lack of hollow-bearing trees and bare ground

Photo 3 High-intensity burned forest in the southern WHC area in Compartment MYR011 showing widespread, proliferating wattle regeneration leading to an increase in fire-prone vegetation

Photo 4 High-intensity burned forest in the southern WHC area in Compartment MYR011 showing dead trees, expanses of bare, burned ground and widespread regeneration

Photo 5 High-intensity burned forest in the southern WHC area in Compartment MYR011 showing complete loss of original canopy foliage, dead and dying trees and Inkberry establishment

Photo 6 High-intensity burned forest in the southern WHC area in Compartment MYR011 showing dead trees, complete loss of original canopy foliage, an incinerated stag and bare ground

Photo 7 Less intensively burned forest in the centre of Compartment MYR011 showing live trees comprising the majority of the stand and regenerated native grass and sedge ground cover

Photo 8 Less intensively burned forest in the centre of Compartment MYR011 showing live Broad-leaved Ironbark, Spotted Gum and Forest Red Gum dominating the stand

Photo 9 Less intensively burned forest in the centre of Compartment MYR011 showing maturing Ironbarks and Spotted Gums with original foliage and some trees bearing branch hollows