

NAME REDACTED

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Organisation: *North East Forest Alliance*

Location: *New South Wales*

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Topic 1. Sustainability of current and future forestry operations in NSW

1.

The future of native forests as well as some plantation forest looks grim, both for plant and animal species that live within them, directly due to the forestry management practices sometime from the past but especially due to current practices that show little if any regard for the sustainable future logging potential, and appear to primarily be concerned with meeting unrealistic logging contracts. Harvesting quantities have decreased by around 40% since 2011 (page 10 - 11 of <https://app.powerbi.com/view?r=eyJrljoiYWM4OTc5MTItZTRkNC00YzI1LTg3MjMtZjk4MGZlNjZkMzdmlwidCl6ljdIODcyMjA5LWY3MGItNDU3OC1hNzk5LTA4YTdjZjAzODI3NSJ9>).

In the days when men with chainsaws undertook the logging of native forests, depending on how much they took they were able to leave at least 50% canopy as well as a significant percentage of the existing understorey plants, even after the logs were pulled out. I remember the requirement of loggers to leave 50% of the canopy in most situations. Today the logs are cut and removed by huge tracked machines that leave nothing on the ground, and very little in the canopy after the logs have been removed. Any logging tracks to be constructed are limited by the mobility of the large tracked machines and are often seen to travel directly up and down a steep slope rather than across it that will help to protect the slope from erosion (personal observations Cherry Tree State Forest 2018). The speed at which these machines can clear a forest means that not only have they taken far more than the 50% canopy permitted, but they have taken the understorey as well. In forest terms, it will be far more difficult for the forest to recover from the more damaging logging undertaken on this industrial scale that these huge machines represent. During this time of recovery and perhaps brought in by the machines will be numerous exotic plant species that may well make it impossible for the forest to recover to its natural state, and will affect the regrowth of the timber species. Some such as lantana are key threatening processes (<https://threatenedspecies.bionet.nsw.gov.au/>), and Bell Miner dieback (<https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/nsw-threatened-species-scientific-committee/determinations/final-determinations/2008-2010/forest-eucalypt-dieback-over-abundant-psyllids-and-bell-miners-key-threatening-process-listing>).

The reduced canopy and bare ground leave the area open to drying out making it more vulnerable to wildfire (https://www.publish.csiro.au/ebook/chapter/9781486316656_22), and give greater opportunity for weed invasion (<https://www.aciar.gov.au/publication/books-and-manuals/lantana-current-management-status-and-future-prospects>). In addition, habitat for threatened animal, bird and plant species is removed. Contrary to claims made by Forest Corporation (page 17

<https://app.powerbi.com/view?r=eyJrljoiYWM4OTc5MTItZTRkNC00YzI1LTg3MjMtZjk4MGZlNjZkMzdmlwidCl6ljdIODcyMjA5LWY3MGItNDU3OC1hNzk5LTA4YTdjZjAzODI3NSJ9>) I have never seen any evidence that loggers or any other person have returned to a logged site to undertake or assist with weed control (Cherry Tree SF, various State Forests on the mid North Coast). One native forest site that I observed at Cherry Tree SF was so heavily logged in the previous session

that all that remained were two or three trees and a monospecific understorey of lantana. This cannot be called sustainable logging.

Clearing forests (or nearly so) and other areas of native vegetation releases large quantities of carbon (https://fwpa.com.au/wp-content/uploads/2016/01/Amended_Final_report_C_native_forests_PNC285-1112.pdf), particularly when so few of the trees logged end up as hardwood timber (only 12.8%. The remainder will be sold as woodchips for manufacture into short life span particle boards. The current logging practices are a significant addition of 24% to global warming (<https://press-files.anu.edu.au/downloads/press/p56611/pdf/book.pdf>).

Current logging practices damage waterways by increasing silt and mud loads and destroying habitat for aquatic and amphibian fauna that live in smaller waterways and gullies. The silt also reduces water flows that are being used for human consumption. The loss of the trees also add to the reduced water flow, since the action of trees lifting water from the roots to the shoots, then respiring it at night assists in maintaining water flows.

Topic 2. Environmental and cultural values of forests, including threatened species and Aboriginal cultural heritage values

2.

I conducted a Google Scholar search to see what population genetics studies might have been conducted for greater gliders and yellow bellied gliders and came up with very little. Some work has been done for yellow bellied gliders in Victoria and the Wet Tropics in Queensland, and one paper on the decreasing genetic diversity of an isolated population of greater gliders in Victoria (<https://ro.uow.edu.au/cgi/viewcontent.cgi?article=1217&context=thsci>), with the need to reconnect that population with the main distribution in the area. This study on one small population indicates that greater gliders are vulnerable to inbreeding (lowering of the genetic diversity within the population) and require connectivity to other populations (generally the larger the better) to maintain or build their within-species diversity. At the present time in areas in New South Wales where they occur, the opposite is happening. Large areas of their habitat are being reduced to bare ground with approximately 20% canopy cover, and the connectivity between existing habitat patches is very rapidly being reduced.

The study conducted by NSW Departmental members on yellow bellied gliders

(https://watermark.silverchair.com/i2204-2105-42-2-592.pdf?token=AQECAHi208BE49Ooan9kkhW_Ercy7Dm3ZL_9Cf3qfKAc485ysgAAA3IwggNuBgkqhkiG9w0BBwagggNfMIIDWwIBADCCA1QGCSqGSib3DQEHATAeBgIghkgBZQMEAS4wEQQM_1Ht-kYPxnKa0H4NAGeQgIIDJQkn4xIP8JoBWqoSE4dYYKfwrGMt_Ms2dfQcFu9XFhLLOV4joVjtsCRe4eiHsKMBQjT4PfMDyEtmYXpebyoA9Pu8TleKKoCcArXYi3IRReIHGQERvPnYXXpOVh50mhq4kKUuVz5SljxtY3UKxAhACfMcCOuONB5cOoq_ypX74ERzYZIGB3TvEKN77Auu1yHol0qBYfNaBslSL9ydVYIWDDefE1S8dln_Dgln-

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ehaRgFxfGcsDwVawVKzykugp_0D8GL9EC3FeLqytNI9oS_AokzSmwVJ3if5QEBBVKhdhchSFhPs94kEGabvmu8BuwKPTYF5VsJVRzZbZzqq9IXkH2n7GG2fiiVOI_8dfF_bFsFtIJ3ohzkh7EiY_oc66Xe5NmxBORNu939GibJFL60zOAGwT1TnPuEBKhOO4stu56Q8bq4Tk5xi_Cf0csaoU9JkdD-dFW9BdUOj8o42X0UtIXr5mdlh0SciJWMyA9gmCnAObrCZ3xyUUmV5mbfZqG-

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Baq2AKDJHdn8086EZ9mdK9KrffBSgFUIIklloru9QgbBd3ee7PxN2x1Tco9oIU4j8GiOEO5-T7KI5f7BXEEj5PpcwDN34KzluJcAGsKzYrUvmDsuJO_PPHDkhPyaQdXMA2eY9SCPNzVj7Ena-ihhJTUPIEIOYXq2689SaltKtyjFCPzLQBdAx0tEv5nDfC_eBWlbnNSWlcV3oMhNR4tPU47DJpOITZxZ8) did not involve a genetic study and stated that yellow bellied gliders were not affected by logging activities, however it was admitted that the logging activities were some distance away from their population area and the species being logged was not to their liking.

The second paper written by NSW Departmental members was on koalas (Law et. al [2022], Regulated timber harvesting does not reduce koala density in north-east forests of New South Wales, Nature). This paper shows photos of selectively logged forests that show around 40-50% canopy retention, but do not look at all similar to sites that I have observed in Cherry Tree State Forest (Figure 1a) that show around 20-25% canopy retention. Another site also in Cherry Tree State forest that was logged several years ago shows around 10% canopy retention with an understorey consisting exclusively of *Lantana camara*, an exotic that has replaced the biologically diverse wet sclerophyll/rainforest understorey that was present prior to logging (sorry no photo, but photo of a more recently logged site with exotic weeds rapidly dominating the understorey Figure 1b). According to some of the threatened plant species that were found close by, the logged area was likely to also contain some threatened species that were destroyed by the logging activity.

I believe that Koalas have been pronounced Endangered since the writing of this paper. Would this have anything to do with logging continuing in native forests that does not keep the canopy retention shown in Law et. al (2022), or perhaps the greater exotic weed growth is preventing them from moving around? Of course the magnitude and spread of exotic weeds are an enormous threat to the future of many understorey plants as well as to forest tree seedlings that are unable to get through the weeds. I have never noticed Forest Corporation ever cleaning up weeds or even returning to a logged site to see how it is or is not recovering.

Figure 1(a). Recent selective logging in Cherry Tree State Forest (2023), (b) A selectively logged site not quite so recent that is rapidly being overtaken by exotic weeds, mostly *Lantana camara* (Photos by D. Pugh) - see attached pdf file

I found no information on greater gliders or yellow bellied gliders for New South Wales regarding their genetic diversity status. It appears that we simply don't know what the situation is for yellow bellied gliders, and very little for greater gliders in New South Wales. Lowering of within-species diversity is often a precursor for extinction through inbreeding depression, where the species loses vigor and has decreased resistance to disease and other pathogens. Several big cat species suffer from inbreeding depression, and international collaborative efforts between breeding zoos are attempting to improve the situation by carefully choosing compatible mates that will assist in raising the genetic diversity of the offspring. Humpback whales have made a great recovery from a bottleneck following hunting. This may be because they are a long lived species and the genetic diversity still remains in older but breeding individuals. Their wild habitat also remains viable for the species.

Koalas are now facing extinction, even though their population numbers may seem relatively high. They have suffered two bottlenecks (a catastrophic decrease in population numbers) and a disease that is knocking them out in droves and the loss of good koala quality uninterrupted habitat. The first bottleneck was at the turn of the 20th century when they were hunted for pelts, the second was the 2019 wild forest fires that killed many of them. I believe that New South Wales koalas were re-populated using a few individuals from South Australia and in another area Queensland, implying that their genetic diversity was already quite low when the bushfires hit. They are in trouble (references). To improve the genetic diversity within an animal species connectivity between patches is required so that they are able to mate outside their immediate local population group. Once again this is rapidly being destroyed. Whilst there are major

volunteer efforts to protect koalas in more populated areas near the coast, large numbers of koalas are being killed on the roads when they are trying to mate in a different population to their own. Disease is killing many koalas, but so are vehicles killing the healthy ones (data available from Friends of Koala). Some more koala-friendly road crossings at certain hotspots would help. Preserving their unfragmented forest habitat would also help.

All these arboreal mammals are dependent on habitat connectivity, both for their intraspecific genetic diversity as well as for their safe movement in finding mates and food. Connectivity is also important for plant species, and depends on pollination and seed dispersal methods of particular species as to what is required. Wind, insect and bird or animal pollination and seed dispersal methods exist for different plant species. What is occurring in our native forests under the name of sustainable logging is the opposite. So much habitat and forest is being destroyed that it threatens the future of many species.

Topic 3. Demand for timber products, particularly as relates to NSW housing, construction, mining, transport and retail

3.

There is demand for timber products, particularly structural timber which appears to be in short supply. Does that mean that the natural stocks have been over-logged and depleted the supply, particularly when noting that timber harvests from native forests have dropped significantly over the past few years

(<https://app.powerbi.com/view?r=eyJrljoiYWWM4OTc5MTItZTRkNC00YzI1LTg3MjMtZjk4MGZlNjZkMzdmlwidCI6IjdlODcyMjA5LWY3MGItNDU3OC1hNzk5LTA4YTdjZjAzODI3NSJ9>). When I buy structural timber, I look in the second hand market, the timber is invariably of higher quality than the new timber, and does not deplete the forest resources in the same way. However the second hand market is limited, also due to the same large tracked machines that destroy all the old, good quality timber when they demolish old buildings. It is only when people are prepared to demolish them by hand, thus saving and recycling many of the materials (for instance, houses in Lismore that are currently being demolished).

With the increased wildfire risk seen in recent years, and expected to increase further with climate change, it may be appropriate to consider using a higher steel structural content in houses. Alternatives are now available for cladding, flooring and decking, including plastic combined with wood. These often have a greater lifespan than timber in subtropical/tropical climates, and are less flammable.

Topic 4. The future of softwood and hardwood plantations and the continuation of Private Native Forestry in helping meet timber supply needs

4.

Softwood plantations are important for timber supply at present. The shelves at Bunnings show around 80% of the whole timber (not particle board) to be softwood, presumably from Australian plantations.

Private forestry plantations should have environmental restrictions placed upon them that align with regulations in the public forest estate. It is unacceptable for places that are environmentally significant to be logged or cleared because they are on private land.

Topic 5. The role of State Forests in maximising the delivery of a range of environmental, economic and social outcomes and options for diverse management, including Aboriginal forest management models

5.

State Forests appear to have little environmental awareness or respect (see my answer to Question 2), or for Indigenous cultural use of the forests (for example Forest Corporation's response to Indigenous claims of sites requiring preservation in Newry State Forest within the last 12 months). Economic outcomes have displayed losses over the past 15 years amounting to \$110 million dollars.

(<https://www.forestrycorporation.com.au/about/pubs/corporate/annual-report>)

and social outcomes over the past few years appear to have been abysmal

(https://youtu.be/LRO_YYd-eCc).

Options for State Forests could be to stop logging native state forests and treat the plantation forests with the respect that they deserve, many of them harbouring Endangered species. They could start by conducting scientific studies, as opposed to manipulating data or fudging collection techniques to suit their own desired outcomes (for instance failing to find evidence of greater gliders in areas that they wish to log when members of the public find far more numerous signs of their presence). Another option would be to set the Environmental Planning Authority (EPA) as an independent regulatory authority, as it was first set up to do by the Carr Government, rather than the government apology service that it is today. Yet another option would be to strengthen environmental regulation legislation, something that was promised by both Federal and State Labor governments when they came to power at the respective most recent elections, but appears to be as far away as it was with the Coalition Governments that preceded them. One of the problems with the cessation of logging in native forests appears to be meeting the terms of logging contracts that should never have been signed. Why is this now the fault of the forests? The forests are paying for these contracts.

To my mind, and I believe also to the United Nations environmental bodies, State Forests should be there to protect our native forests, not destroy them, in quite violent ways. They should welcome expert local and indigenous knowledge support rather than banning them from the forest.

Topic 6. Opportunities to realise carbon and biodiversity benefits and support carbon and biodiversity markets, and mitigate and adapt to climate change risks, including the greenhouse gas emission impacts of different uses of forests and assessment of climate change risks to forests

6.

The first and best option is to stop logging native forests, that sequester large amounts of carbon, and the larger the trees the more they hold. Logged native forests emit 3.6 million tonnes annually in New South Wales

<https://static1.squarespace.com/static/60b20f09dcfc4f2bd6b0c171/t/63ddcef58bf792078c351e0f/1675480953905/NSW+Carbon+Report.pdf>.

When choosing alternative building materials to timber (particularly relatively short-lived timber particle boards) the carbon manufacturing footprint needs to be carefully considered.

Ecosystems are far more vulnerable to catastrophic situations such as climate change when they are fragmented. When connectivity is lost, species lose the ability to move from a catastrophic site to a more viable one. This applies to wildfires, flooding or climate change. It is far safer for ecosystems and the organisms that live within them when their environment is a larger patch rather than a smaller one. They are also able to enjoy greater opportunities for genetic diversity within species (Diamond, Theory of Island Biogeography, 1975). Species that have high

Public submission

intraspecific diversity are more likely to have genetic resistance to disease and pathogens.
Everything is healthier, promoting long term existence.

Submission to the New South Wales forestry industry panel



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The future of native forests as well as some plantation forest looks grim, both for plant and animal species that live within them, directly due to the forestry management practices sometime from the past but especially due to current practices that show little if any regard for the sustainable future logging potential, and appear to primarily be concerned with meeting unrealistic logging contracts. Harvesting quantities have decreased by around 40% since 2011 (page 10 - 11 of <https://app.powerbi.com/view?r=eyJrIjoiYWw4OTc5MTItZTRkNC00YzI1LTg3MjMtZjk4MGZlZjZkMzdmIiwidCI6IjdlODcyMjA5LWY3MGItNDU3OC1hNzk5LTA4YTdjZjAzODI3NSJ9>).

In the days when men with chainsaws undertook the logging of native forests, depending on how much they took they were able to leave at least 50% canopy as well as a significant percentage of the existing understorey plants, even after the logs were pulled out. I remember the requirement of loggers to leave 50% of the canopy in most situations. Today the logs are cut and removed by huge tracked machines that leave nothing on the ground, and very little in the canopy after the logs have been removed. Any logging tracks to be constructed are limited by the mobility of the large tracked machines and are often seen to travel directly up and down a steep slope rather than across it that will help to protect the slope from erosion (personal observations Cherry Tree State Forest 2018). The speed at which these machines can clear a forest means that not only have they taken far more than the 50% canopy permitted, but they have taken the understorey as well. In forest terms, it will be far more difficult for the forest to recover from the more damaging logging undertaken on this industrial scale that these huge machines represent. During this time of recovery and perhaps brought in by the machines will be numerous exotic plant species that may well make it impossible for the forest to recover to its natural state, and will affect the regrowth of the timber species. Some such as lantana are key threatening processes (<https://threatenedspecies.bionet.nsw.gov.au/>), and Bell Miner dieback (<https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/nsw-threatened-species-scientific-committee/determinations/final-determinations/2008-2010/forest-eucalypt-dieback-over-abundant-psyllids-and-bell-miners-key-threatening-process-listing>).

The reduced canopy and bare ground leave the area open to drying out making it more vulnerable to wildfire (https://www.publish.csiro.au/ebook/chapter/9781486316656_22), and give greater opportunity for weed invasion (<https://www.aciar.gov.au/publication/books-and-manuals/lantana-current-management-status-and-future-prospects>). In addition, habitat for threatened animal, bird and plant species is removed. Contrary to claims made by Forest Corporation (page 17 <https://app.powerbi.com/view?r=eyJrIjoiYWw4OTc5MTItZTRkNC00YzI1LTg3MjMtZjk4MGZlZjZkMzdmIiwidCI6IjdlODcyMjA5LWY3MGItNDU3OC1hNzk5LTA4YTdjZjAzODI3NSJ9>) I have never seen any evidence that loggers or any other person have returned to a logged site to undertake or assist with weed control (Cherry Tree SF, various State Forests on the mid North Coast). One native forest site that I observed at Cherry Tree SF was so heavily logged in the previous session that all that remained were two or three trees and a monospecific understorey of lantana. This cannot be called sustainable logging.

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Figure 1(a). Recent selective logging in Cherry Tree State Forest (2023), (b) A selectively logged site not quite so recent that is rapidly being overtaken by exotic weeds, mostly *Lantana camara* (Photos by D. Pugh)

I found no information on greater gliders or yellow bellied gliders for New South Wales regarding their genetic diversity status. It appears that we simply don't know what the situation is for yellow bellied gliders, and very little for greater gliders in New South Wales. Lowering of within-species diversity is often a precursor for extinction through inbreeding depression, where the species loses vigor and has decreased resistance to disease and other pathogens. Several big cat species suffer from inbreeding depression, and international collaborative efforts between breeding zoos are attempting to improve the situation by carefully choosing compatible mates that will assist in raising the genetic diversity of the offspring. Humpback whales have made a great recovery from a bottleneck following hunting. This may be because they are a long lived species and the genetic

diversity still remains in older but breeding individuals. Their wild habitat also remains viable for the species.

Koalas are now facing extinction, even though their population numbers may seem relatively high. They have suffered two bottlenecks (a catastrophic decrease in population numbers) and a disease that is knocking them out in droves and the loss of good koala quality uninterrupted habitat. The first bottleneck was at the turn of the 20th century when they were hunted for pelts, the second was the 2019 wild forest fires that killed many of them. I believe that New South Wales koalas were re-populated using a few individuals from South Australia and in another area Queensland, implying that their genetic diversity was already quite low when the bushfires hit. They are in trouble (references). To improve the genetic diversity within an animal species connectivity between patches is required so that they are able to mate outside their immediate local population group. Once again this is rapidly being destroyed. Whilst there are major volunteer efforts to protect koalas in more populated areas near the coast, large numbers of koalas are being killed on the roads when they are trying to mate in a different population to their own. Disease is killing many koalas, but so are vehicles killing the healthy ones (data available from Friends of Koala). Some more koala-friendly road crossings at certain hotspots would help. Preserving their unfragmented forest habitat would also help.

All these arboreal mammals are dependent on habitat connectivity, both for their intraspecific genetic diversity as well as for their safe movement in finding mates and food. Connectivity is also important for plant species, and depends on pollination and seed dispersal methods of particular species as to what is required. Wind, insect and bird or animal pollination and seed dispersal methods exist for different plant species. What is occurring in our native forests under the name of sustainable logging is the opposite. So much habitat and forest is being destroyed that it threatens the future of many species.

3.

There is demand for timber products, particularly structural timber which appears to be in short supply. Does that mean that the natural stocks have been over-logged and depleted the supply, particularly when noting that timber harvests from native forests have dropped significantly over the past few years (<https://app.powerbi.com/view?r=eyJrIjoieYWM4OTc5MTItZTRkNC00YzI1LTg3MjMtZjk4MGZlZmZkMzdmIiwidCI6IjdlODcyMjA5LWY3MGItNDU3OC1hNzk5LTA4YTdjZjAzODI3NSJ9>). When I buy structural timber, I look in the second hand market, the timber is invariably of higher quality than the new timber, and does not deplete the forest resources in the same way. However the second hand market is limited, also due to the same large tracked machines that destroy all the old, good quality timber when they demolish old buildings. It is only when people are prepared to demolish them by hand, thus saving and recycling many of the materials (for instance, houses in Lismore that are currently being demolished).

With the increased wildfire risk seen in recent years, and expected to increase further with climate change, it may be appropriate to consider using a higher steel structural content in houses. Alternatives are now available for cladding, flooring and decking, including plastic combined with wood. These often have a greater lifespan than timber in subtropical/tropical climates, and are less flammable.

4.

Softwood plantations are important for timber supply at present. The shelves at Bunnings show around 80% of the whole timber (not particle board) to be softwood, presumably from Australian plantations.

Private forestry plantations should have environmental restrictions placed upon them that align with regulations in the public forest estate. It is unacceptable for places that are environmentally significant to be logged or cleared because they are on private land.

5.

State Forests appear to have little environmental awareness or respect (see my answer to Question 2), or for Indigenous cultural use of the forests (for example Forest Corporation's response to Indigenous claims of sites requiring preservation in Newry State Forest within the last 12 months). Economic outcomes have displayed losses over the past 15 years amounting to \$110 million dollars. (<https://www.forestrycorporation.com.au/about/pubs/corporate/annual-report>)

and social outcomes over the past few years appear to have been abysmal (https://youtu.be/LR0_YYd-eCc).

Options for State Forests could be to stop logging native state forests and treat the plantation forests with the respect that they deserve, many of them harbouring Endangered species. They could start by conducting scientific studies, as opposed to manipulating data or fudging collection techniques to suit their own desired outcomes (for instance failing to find evidence of greater gliders in areas that they wish to log when members of the public find far more numerous signs of their presence). Another option would be to set the Environmental Planning Authority (EPA) as an independent regulatory authority, as it was first set up to do by the Carr Government, rather than the government apology service that it is today. Yet another option would be to strengthen environmental regulation legislation, something that was promised by both Federal and State Labor governments when they came to power at the respective most recent elections, but appears to be as far away as it was with the Coalition Governments that preceded them. One of the problems with the cessation of logging in native forests appears to be meeting the terms of logging contracts that should never have been signed. Why is this now the fault of the forests? The forests are paying for these contracts.

To my mind, and I believe also to the United Nations environmental bodies, State Forests should be there to protect our native forests, not destroy them, in quite violent ways. They should welcome expert local and indigenous knowledge support rather than banning them from the forest.

6.

The first and best option is to stop logging native forests, that sequester large amounts of carbon, and the larger the trees the more they hold. Logged native forests emit 3.6 million tonnes annually in New South Wales <https://static1.squarespace.com/static/60b20f09dcfc4f2bd6b0c171/t/63ddcef58bf792078c351e0f/1675480953905/NSW+Carbon+Report.pdf>.

When choosing alternative building materials to timber (particularly relatively short-lived timber particle boards) the carbon manufacturing footprint needs to be carefully considered.

Ecosystems are far more vulnerable to catastrophic situations such as climate change when they are fragmented. When connectivity is lost, species lose the ability to move from a catastrophic site to a more viable one. This applies to wildfires, flooding or climate change. It is far safer for ecosystems and the organisms that live within them when their environment is a larger patch rather than a

smaller one. They are also able to enjoy greater opportunities for genetic diversity within species (Diamond, Theory of Island Biogeography, 1975). Species that have high intraspecific diversity are more likely to have genetic resistance to disease and pathogens. Everything is healthier, promoting long term existence.