

The Landholders Institute Inc.

Sustainable production, sustainable conservation, and defending Landholders rights

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14th January 2004

The Prime Minister
The Hon. John Howard MP
Parliament House
Canberra ACT 2600

RE: FUNDING OF IMPROPER EXERCISE OF POWERS, NSW NATIVE VEGETATION

Dear Mr Howard,

I enclose a copy of the Landholders Institute's submission to Byron Shire Council in respect of their draft Byron Biodiversity Conservation Strategy. This is a highly relevant snapshot of the entire vegetation management debate in Australia for the following reasons;

- 1 Tourism has made this location very familiar to many Australians.
- 2 It is a location that accentuates trends and processes that are evident but less visible over much of the country.
- 3 It is the unambiguous 'heartland' of the green movement, the one place where one might reasonably expect them to have a very clear grasp of local ecological processes.

The submission makes it clear that the latter is simply not the case. Indeed, the only reasonable conclusion to be drawn from this example is that the representations that have shaped the local policy process, and in most part, the NSW native vegetation policy process, are in substantial variance with the facts.

Of particular relevance is the evidence that is capable of establishing that;

- 1 Native forest habitat has expanded in area by 2.5 to 3 times since the point of maximum clearance in about 1954.
- 2 This habitat expansion is net of all clearing over the past half century.
- 3 The current rate of native forest clearing (5ha/yr) is only 3.3% of the average annual expansion rate (150ha/yr) over the past half century.
- 4 A declared weed, Camphor Laurel, is expanding at three times (450ha/yr) the rate of native forest expansion and the total area covered by this weed is likely to outstrip all native regrowth since 1954 within a decade.
- 5 Byron was the first rural shire to impose clearing controls (1988). This would be expected to increase clearing of non-native vegetation to satisfy demand but there is no evidence of an underlying propensity to clear. Despite 4500ha of Camphor Laurel (26% of private forest), prohibitions on the alternative and strong ecological encouragement, annual clearing is only 5ha/yr (i.e. 1% of expansion rate or 0.1% of the resource).
- 6 Clearing cannot, lawfully, be described as a threat to biodiversity in any location, region or State where the rate of forest expansion has been significantly greater than the clearing rate.
- 7 Clearing cannot, lawfully, be described as a threat to biodiversity in any location, region or State where the activity primarily involves the destruction of weeds.
- 8 The net change in vegetation and the composition of those changes are fundamental considerations that must be taken into account in determining the need for, and extent of, any measures that restrict or deny a tree owner's use and enjoyment of his property.

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- 9 The common view is that weeds are invading forests when the evidence clearly establishes the direct opposite. The weeds came first and forest is invading the weeds.
- 10 The real experts in ecology, the wildlife, actually prefer variegated farmland to native forest habitats. Most birds and many other species, including threatened species, are found in greater numbers in modified landscapes. They enjoy very significant habitat value from crops, pastures and orchards and if they recognize such material as 'habitat' then there is no excuse for not recognizing it in our policy processes.
- 11 At least 7 listed threatened species are now dependent on Camphor Laurel for their survival and many others depend on other weeds like Lantana.
- 12 Other threatened species, like the Banded Snake and the Powerful Owl, achieve greatest densities in suburban landscapes. The latter developing a welcome appetite for surplus possums and unrestrained domestic cats.
- 13 The legal precedents have clearly established that questions of adequate habitat connectivity, and therefore habitat size and viability, must be assessed in terms of relevant threatened species and their capacity to cross gaps of various distances. Adequate connectivity does not demand connected tree canopy.
- 14 Questions of habitat size, viability and threat must consider all elements of habitat that are recognized by the species themselves.
- 15 Given the demonstrated capacity of the great majority of species to enjoy enhanced habitat values from non-native vegetation, domesticated native crops and declared weeds, there is no valid basis for assuming that the removal of native vegetation is a synonym for habitat destruction or habitat fragmentation.
- 16 There is obviously a number of species for which that assumption is valid but this is rendered irrelevant in any location, region or State where the net change in native forest habitat has been unambiguously positive for an extended period.
- 17 These considerations completely negate most of the threats to biodiversity that have been listed in the Draft Byron Biodiversity Conservation Strategy. These have all been 'cut and pasted' from the equivalent State policy and one must conclude that the same threats at State or regional level are also negated, albeit to a lesser extent than in Byron Shire.

Conclusions

The facts appear capable of establishing that the Biodiversity and Vegetation Management policy processes, at Local Government, Regional and State level in New South Wales have been subject to serious and serial misrepresentation of fact.

The facts appear capable of establishing that the powers that are being implemented under those policy processes are being exercised improperly and possibly negligently so.

The photographic records that are capable of establishing that vast areas of NSW have undergone significant forest expansion over the past half century are readily available to the relevant local, regional and State administrations. One can only conclude that the absence of detailed study of this essential information is by design rather than default.

We are particularly concerned that your government appears willing to provide the funding for the NSW Government's flawed policy processes. We request that funding for NSW vegetation management policy be withheld until that process can demonstrate that it meets the community's core expectations of propriety.

Yours sincerely,

Ian Mott

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Briefing Paper to the Prime Minister

**On the variances between accepted ecological wisdom
and actual threats to habitats and biodiversity,
the implications for native vegetation management, funding and liability,
in New South Wales.**

Prepared by

Ian Mott
Secretary, The Landholders Institute Inc.
On 14th January 2004

**First presented as a briefing to;
Byron Shire Landowners, and Submission to Byron Shire Council,
in response to the
Draft Byron (Shire) Biodiversity Conservation Strategy 2003,
and matters arising.**

Prepared by Ian Mott,
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Overview

The key to understanding the Byron (Shire) Biodiversity Conservation Strategy is found in recent research reported on the ABC TV's Catalyst program (20/02/03)⁽¹⁾. Magnetic Resonance Imaging (MRI) revealed that the brains of many long term dope smokers worked in an almost identical pattern to schizophrenics. So it is worth reflecting that this strategy is the product of a community that, on one hand can spend 48 hours at a 'Doof,' scaring the wits out of every creature in the surrounding 4000 hectares of forest while engaging in a number of extremely high risk behaviours. Yet, only days later, can keep a straight face while delivering boorish lectures on intergenerational equity to fourth generation locals.

And there are, indeed, two personalities at work in this strategy. The first, we'll call him/ her "mellow fellow", has put valuable time and effort into incentives that could enhance ecological values by assisting existing beneficial processes. But, invariably, the other personality, "tightarse," takes control and the work is ruined by dark broodings on half century old clearing events, imagined threats behind every rock, imminent extinctions and totally disproportionate responses to the ebbs and flows of rural life.

The author is a fourth generation descendant of the first permanent settler in this shire. And it provides no comfort to observe that this strategy also exhibits an overdose of the vague, unsubstantiated preconceptions of recently arrived suburbanites. The draft is a quantity free zone. It's reluctance to move from the general to the specific is a regrettable example of the kind of, "too clever by half," policy documents that have put the **sus** into that splendid concept, sustainability, and erode any basis for effective partnerships.

It is also painfully obvious that this strategy has not been translated into Owl, Possum or Flying Fox. There is no question that the major stakeholders in any biodiversity strategy are the species themselves, particularly those listed as endangered or vulnerable. But someone forgot to tell them that the past fifty years has been a period of "continuous and cumulative decline". Indeed, these annoying "greynecks", if you will, appear intent on proving that the *BF&FS*, the *BSOER*, and the *BBCS* is bumpf.

The strategy and it's supporting documents contains errors and omissions of fact combined with partial and fragmentary statements of opinion masquerading as fact. These misrepresentations are of such magnitude and materiality that the strategy, and the measures within it, could not possibly be implemented without constituting an inappropriate exercise of power as defined under the relevant powers of judicial review.

We remind the council that the statutory provisions, including *inappropriate exercise of power*, outlined in *Sec5 of the Administrative Decisions (Judicial Review) Act 1977* ⁽²⁾ are also the basis for informing best practice governance. This paper will raise material issues of fact that must be fully investigated by the relevant council staff if they are to comply with their statutory obligations to carry out their duties without negligence and with appropriate diligence, care and attention.

We direct the General Manager of Byron Shire Council to the section on equity and advise that we would be most willing to provide assistance in further investigation of options and in the discharge of all duties and obligations.

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The actual state of the forests

It is totally inappropriate for any inputs to a process that calls for new measures under a *Planning Instrument*, as this strategy does, to exclude specific details of the character, scale and frequency of relevant activities and ecological processes within the Shire over the past half century. In most part, the strategy refers to the impacts of the original clearing of forest in the district which essentially took place between 1903 and 1953. So where is the second half of the story?

The State of the Environment Report 2002 (Table 7.2 p 42) claims there is 1,035 hectares of Wattle /mixed regrowth in a total private forest estate of 17,498 hectares. But the photographic evidence reveals these classifications to be very misleading as most private forest is less than 50 years old.

Appendix I has two 1954 aerial photographs that cover the Upper Main Arm, Blindmouth, The Pocket, Middle Pocket, Palmwoods and portions of the Upper Wilsons Creek catchments. They cover some 7,200 hectares of the shire and approximate a 25% sample of the western half of the shire that, today, has the most of Byron's forest cover. All the catchments exhibit a similar settlement pattern with almost all forest concentrated on the, south facing, north side of each valley where the productivity of the land did not justify clearing.

The photos show only 1,667 hectares of forest within the shire area of which 600ha is State Forest. This leaves a net private forest resource of only 1,067ha (16.1% of private land). Some of this has been subject to selective harvesting over the past 50 years but almost all of it is still intact. It is hardly unreasonable to extrapolate from this 25% sample to get a total of only 4,268ha of true remnant private forest in the western half of the shire.

Note that the fourth segment in the west, the southern most, had little forest then and still has little today so the most likely private resource in 1954 was more like 3,200ha in the west plus 800ha nearer the coast. To avoid any suggestion of exaggeration we will use the higher estimate of about 5,000ha for the shire. This issue can be easily resolved for the price of eight photos (\$200).

The photos indicate that some 12,500ha (71%) of private forest in the shire has regenerated onto previously cleared land in the past half century. We know that some 4,668ha (37%) of this is Camphor Laurel but the rest, about 7,800ha, is some sort of native regrowth. And this raises a number of points with important policy implications;

- 1 Apart from sand mining (1960's) there has been little old growth clearing since 1950.
- 2 There was very little regrowth in 1954 but clear evidence of weed growth.
- 3 Most of the current stock of private forest (12,500ha) is the net surplus of regrowth over clearing over the past half century
- 4 Most of the current stock of private native forest (7,800ha) is the net surplus of native regrowth over native forest clearing over the past half century.
- 5 This regrowth is not being invaded by weeds. The photos clearly show that the weeds came first. Regrowth has occurred on land that was already dominated by weeds.
- 6 The trees are successfully invading the weeds, not the other way round.
- 7 Most remnant patches now have significant buffers of regrowth that is out-competing the weeds and enhancing the carrying capacity of most remnants.
- 8 Total non-domestic vegetation cover in Byron Shire was reduced to 18% in the first half of last century but has more than doubled to 40% in the second half century.

This is not the profile of a resource under threat. Any suggestion that a threat exists is a misrepresentation of fact to the policy process.

Where is the detailed, specific evidence of threats?

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We note that the diagram, Fig 2. “The structure of the strategy” (p17), identifies priorities solely on the basis of the Relative Ecological Values Matrix. There is no reference to the incidence, scale, frequency or relevance of identified and measured threats. And there is no reference to any beneficial process (opportunities) that may be present. Indeed, the strategy incorporates only the pessimistic half of a standard SWOT (Strengths- Weaknesses, Opportunities - Threats) Analysis.

We also note that the section tasked with outlining actual threats to biodiversity in the shire, ie, part **1.4 Threats to Local Biodiversity** (p9), appears to have great difficulty in moving from generalization to the specific. A list of “Major activities and impacts that *can* lead to losses in biodiversity,” is included but no attempt is made to identify the significance or relevance of the listed items, here and now, in Byron Shire.

A reference to the *Byron Flora and Fauna Study (1999)* is also made but no specific information on the incidence of identified categories, (vegetation clearance, connectivity and fragmentation, weeds, fire, grazing, predation and development) is forthcoming.

This trend continues in the next paragraph’s reference to the capacity to list threatening processes under the NSW *Threatened Species Conservation Act 1995*. But it only generalizes with;

“The main threatening processes affecting biodiversity in Australia and also Byron LGA include:

- Loss of habitat and essential functions resulting from fragmentation etc,
- Introduction of exotic species,
- Loss of local genetic vigour,
- Direct exploitation, and
- Impacts of air & water pollution”

No attempt is made to inform those reviewing the strategy of how much habitat has been cleared since the previous *relevant dates*, that is, the implementation of the Shire Wide Tree Preservation Order in 1988 and subsequent revisions. No information is provided on how many extra hectares of Camphor Laurel and Lantana we have gained over the past decade or what volume of silt and gravel has been entering our creeks each year/decade.

There is also the clear implication that there is no significant variance between the national relevance of threats and the local relevance of the same threat. And this implication is a gross misrepresentation of fact. The character, scale and frequency of recent clearing in the Queensland Desert Uplands region has no commonality whatsoever with recent clearing in Byron Shire.

Another reference is made to the *Byron Flora and Fauna Study 1999* that falsely and misleadingly uses native vegetation as a surrogate for habitat. It states;

“(the BFFS) found that previous land clearing and habitat modification has drastically reduced the area of native vegetation (and available habitat) through the LGA.”

This repetition of the historical generalization, combined with the omission of other relevant information (fauna’s use of replacement crops, orchards and weeds) is implying that the removal of native vegetation is synonymous with the absence of all habitat values. Clearly, the possums fornicating on my roof and the Flying Foxes bombing Mullumbimby with mangoes do not agree.

There is no evidence to support the statement in the opening paragraph of part 1.4 that;

“Within Byron LGA the impact of environmental changes and imposition of various threatening processes following human settlement (and associated patterns of resource use and settlement) **has led to a continual and cumulative decline in biodiversity**”.

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This statement was true in 1922 and it was also true in 1952. There is also a number of places within the shire where it may still be true but the aerial photographic records, backed up by the photographs and personal recollections of long term residents who have been closely involved in intergenerational land management, clearly establish that both native and contributive non-native habitat has undergone a **continual and cumulative expansion over more than the past half century**. And the character and scale of this expansion can only be interpreted as a **continuous and cumulative improvement** in biodiversity.

This is obviously at variance with the diagram in Figure 1 (p11), but this is just a model with some very serious flaws and externalities that render it false and misleading. These are;

- 1 It fails to recognize that intact habitats, variegated habitats and fragmented habitats can occur in the one region, LGA or district at the same time.
- 2 The model is particularly inappropriate for a small shire like Byron because of the very significant area of intact and connected habitat just over the shire boundary in State Forests, Reserves and Private land.
- 3 It wrongly assumes that non-native vegetation (ie. Macadamias, Camphor Laurel, Lantana) makes no contribution to connectivity or other biodiversity values when the evidence can establish that it can often make a greater contribution.
- 4 It wrongly assumes that the ecological contribution of native vegetation is uniform and constant when the evidence establishes that it is subject to major seasonal, climatic and life cyclical variation.
- 5 It wrongly assumes that vegetation equals habitat when there is overwhelming evidence that there are other attributes like water, sand, soil, rock, bridges, fence posts, buildings and even junk that are capable of delivering connectivity and biodiversity values, either in their own right or as substitutes.
- 6 It assumes that vegetation and habitats, once depleted, are incapable of recovery. Byron's intact native vegetation cover did drop to about 18% in the 1950's but it has since recovered considerably. So even if the model were appropriate for our circumstances, it should now portray a significant recovery.
- 7 It does not tell us who these "connectivity sensitive species" actually are but we are given the impression that their departure will leave us with substantially diminished biodiversity in direct proportion to the reduction in native vegetation.
- 8 After 125 years of habitat modification we have identified species that are at risk and have placed them on the Endangered and Vulnerable list. One must assume that all other species are the "species of disturbed landscapes" that remain.

Tim Low, in "The New Nature – winners and losers in wild Australia"⁽³⁾ provides an extensively referenced chronicle of species that have not only failed to decline but have undergone continual and cumulative improvement from their exploitation of modified landscapes. He reported on "arguably the first ecological study undertaken in Australia," by Ratcliffe (1929) into Flying Foxes. He found that there had been no winter camps south of the Mary River SEQ until the first permanent camp appeared at Nambucca in 1932 in response to the modified landscape. Today, Low advises that "Grey Headed Flying Foxes occupy permanent camps as far south as Sydney and Melbourne," while, "Black Flying Foxes maintain year round camps in northern NSW." (p127)

Low has not argued that the original clearing did not produce a decline in biodiversity and neither does this paper. What he has done is provide very powerful evidence that species have moved on. Many have maintained their condition in the modified landscape while others have experienced continual and cumulative improvement in circumstances. Others have not done so well and are listed as endangered or vulnerable. And it is the detailed study of their situation that provides the most damning criticism of the *Byron Biodiversity Conservation Strategy*. Clearly, the BBCS has not moved on from the last significant clearing of old growth forest in the 1950's.

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The Actual Threats

Clearing

The actual area of clearing that has taken place over the past three years in the shire is revealed in The BSOE Report 2002,⁽⁴⁾(Table 7.1 “Vegetation Clearing Approved under the Native Vegetation Conservation Act” p41). It should be noted that this is the area of the approval, not the area actually cleared, which is usually smaller.

The total clearing for the period was only 31.11 hectares for an average of only 10.47 hectares each year. This fell into two categories. The first was native vegetation (for safety protection (ie country energy) and plantation establishment) with 15ha in 1999, none in 2000, and 0.79ha in 2001. Most of this average of 5.3ha/year would have been Wattle/mixed regrowth/lantana as the other forest classes would be kept for forestry purposes in their own right.

The second category was clearing of exotics (Camphors) with 7.5ha in 1999, 2.8ha in 2000, and 4.9ha in 2001. This averaged only 5.08ha/year and this clearing figure raises some very relevant policy considerations. These are;

- 1 Camphor Laurel is a declared weed that was only left off the noxious weeds list because of the economic impact on the community of any resulting compulsory obligation to remove it.
- 2 Camphor Laurel and most other exotics are not subject to the Tree Preservation Order so there is both regulatory and community encouragement to clear it.
- 3 The mapped area of Camphor Laurel is 4,668 hectares, with additional areas in unmapped patches less than 1 hectare (fence lines, roadsides and riparian) and some 1,555 hectares of “rainforest (low to medium camphor presence).”
- 4 Camphor Laurel is found on more than 41% of the total private forest estate so the minimal clearing of this category provides a very good indicator of the landowning community’s underlying reluctance to clear vegetation.
- 5 This Camphor Laurel estate is generally accepted as having originated from less than 1 hectare of trees planted in school yards some time around 1895.
- 6 To expand to it’s current size, from that starting point, the area of Camphor Laurel would have had to expand at a compounded rate of 9% each year. This model is consistent with the observed condition of known Camphor dominated land in the 1954 photo and with the recollections of long term residents.
- 7 Therefore, the current area of Camphor Laurel is likely to be expanding at an annual rate of 420 hectares.
- 8 Therefore, the current average of 5.08 hectares of Camphor Laurel clearing is only 1.2% of the current annual expansion rate.

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The regrowth clearing rate also has some very relevant policy considerations. These are;

- 1 Most of the clearing for plantation establishment involves Wattle/regrowth/ lantana dominated sites where the actual tree canopy cover is less than 50%.
- 2 Therefore, half the clearing in this category is of Lantana and other weeds.
- 3 The BSOE Report (p42) includes a gross misrepresentation by omission when it states “A comparison of these figures with last years GIS figures indicates that there has been no significant change in the number of hectares covered by each of the vegetation types”. A one year interval has never been regarded as adequate for determining forest expansion because the change is gradual and only detectable over a number of years. For example, a 2% expansion in a 20ha clump that is 200 metres wide and 1000 metres long will only involve a shift in the tree line of 1.66 metres. (i.e. 0.066 of a millimetre on a 1:25,000 scale map) The distortion on the current vegetation map on my property at Main Arm is about 100 metres.
- 4 The aerial photographs indicate that the area of private native forest in 1954 was about 5,000 hectares so to expand to the current area of 12,500 hectares it would have had to expand at a compound rate (after clearing) of 2% per annum. Therefore, the private native forest estate is likely to be expanding by about 250 hectares each year.
- 5 And this means that the current clearing rate of 5.3ha/year is only 2% of the current annual expansion rate.
- 6 Even if the 2% compound rate is rejected, the 7,500ha increase over the 47 years from 1954 to 2001 indicates a long term average **net** expansion of 160ha each year and the current 5.3ha clearing rate amounts to only a 3.3% reduction in the average annual expansion rate.

Clearing conclusions

Clearing activity, in Byron Shire, primarily involves the destruction of declared weeds so it cannot, reasonably or lawfully, be described, by any person subject to the *Public Sector Employment & Management Act*, as a threat to biodiversity.

Clearing activity, in Byron Shire, merely reduces the rate at which native forest is expanding by only 2-3% of the expansion rate and cannot, reasonably or lawfully, be described, by any person subject to the *Public Sector Employment & Management Act*, as a threat to biodiversity.

The character, scale and frequency of clearing in Byron Shire provides no evidence that could reasonably be interpreted as indicating that the current vegetation planning instrument, the Shire Wide Tree Preservation Order, has either failed to protect biodiversity since it's implementation, or is unable to cope with all reasonably foreseeable clearing contingencies.

The strategy provides no valid evidence or argument that would justify the imposition of any new environmental protection measure.

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Fragmentation.

A forest habitat that has expanded to the extent outlined above is clearly not subject to continuous and cumulative decline through fragmentation. Indeed, Upper Main Arm is now essentially a vegetated catchment with remnant pastured gaps when it was once the direct opposite. The remnants on the ridge between Main Arm and The Pocket now extend to Chincogan and are now linked to the Koonyum Range and the Pocket, Middle Pocket and Blindmouth cluster. The author was a regular traveler to Upper Huonbrook in the 1950's and 60's and can confirm that the same degree of defragmentation (reconnection) has occurred in Wilsons Creek and Huonbrook.

But even this evidence does not tell the full story on the real incidence and relevance of connectivity. There is no doubt that the major stakeholders in any question of adequate connectivity are the species themselves. And foremost among these are those species listed as Endangered or Vulnerable.

The Threatened Species Conservation Act has been in place since 1995 and this placed an obligation on all landowners to conduct an eight point test of significance to determine the effect of their proposed actions on threatened species. And it is part (d) of this test that provides the statutory definition of severed connectivity.

- (d) “whether an area of known habitat is likely to become isolated from currently interconnecting or proximate areas of habitat for a threatened species, population or ecological community.”

In essence, two or more areas of habitat for a threatened species are considered “interconnecting or proximate areas of habitat” if individuals of the species could potentially move from one area to the other. According to Turner & Smith (1996) (as quoted in my own 8 point test conducted by DLWC in 1997) ⁽⁵⁾ ;

“An area of known habitat will be considered ‘likely to become isolated’ from a ‘currently interconnected or proximate area of habitat for a threatened species’ if it is predicted that the proposed activity would create a situation preventing the future movement of individuals between areas.”

The standard departmental operating procedure for assessing this is to list the relevant species in terms of their ability to cross a gap in known habitat. So those Birds, Flying Foxes, Bats and large Mammals that can cross very large gaps (1km or more) are classed as “no barrier”, ie, they are adequately connected. One local listed species, The Brolga, has been recorded as having crossed the Tasman to NZ (after a big night out in Bondi?) and can certainly be regarded as adequately connected. Others are able to cross “large gaps” (up to 1000 metres) and these include Koalas, smaller mammals, most snakes and frogs etc. And finally, those that can only cross “minor gaps” are listed and these include the Pouched Frog and the Three Toed Snake Toothed Skink.

So the principle that connectivity should be expressed as a function of species capacity to cross gaps is very firmly established in both law and administrative procedure. **So why, then, does the Byron Biodiversity Conservation Strategy continue to use ‘connected forest canopy’ as a surrogate for connectivity?**

If the strategy is to be consistent with the statutory definitions of connectivity, and best practice, then it must map connectivity in terms of the number of threatened species that can, and may need to, cross various sized gaps.

And obviously, species that are not relevant need not be mapped. Frogs that achieve connectivity by way of creeks and wetlands (and spread by their eggs attaching to the feet of ducks) may not be

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used to indicate some sort of severed connectivity between ridge-top forest clusters. And clearly, the dune dwelling Little Tern may not be used to justify a connection between two patches of Rainforest.

Species that are not listed as threatened are of significantly 'lesser concern' because their connectivity is not currently at issue. And until they are actually first listed as vulnerable there is no justification for using compulsion to create a new corridor that they are obviously doing quite well without.

The 8 point test, done by DLWC for my property at Main Arm (07/1997), listed 14 threatened species as relevant to connectivity in this location. They provide a very interesting insight into what is and is not adequately connected for the maintenance of ecological values.

Half of them (7) were facing "No Barrier," the Powerful Owl, Red Goshawk, Rose Crowned Fruit Dove, Superb Fruit Dove, Black Flying Fox, Golden Tipped Bat and Olive Whistler. More recent listings would include the Black Cockatoos etc.

Another five were able to cross "Large gaps" (up to 1000 metres), the Koala, Spotted Tailed Quoll, White Crowned Snake, and two frogs, the Green Thighed and Loveridges. And it should be noted that Low (p112) has reported that the White Crowned Snake has a marked preference for suburban gardens over intact vegetation so it's connectivity needs may well be best served by (perish the thought) 'ribbon' housing development. The frogs will obviously maintain connectivity via creek lines but, clearly, a gap of up to 1000 metres in riparian tree cover will still constitute adequate connectivity for these species.

Only two, the Pouched Frog and the 3 Toed Snake Toothed Skink were classed as only able to cross "Minor gaps." The frog is not a tree frog so is clearly not relevant for any non-riparian forest cover. The skink is primarily concerned with low lying vegetation cover and this could just as easily be satisfied by weeds, lantana and tall grasses.

There are no gaps wider than 1000 metres in the entire Upper Main Arm catchment, and certainly none without Lantana or other weeds. And one can only conclude that, for all the species that really matter, all the species under any significant pressure, the entire catchment is adequately connected. There are gaps but there is no fragmentation. It is a single habitat.

And given the similarity in relevant species, the current maps also make it clear that a similar level of connectivity and absence of fragmentation is present in Huonbrook, Upper Wilson's Creek, Wilson's Creek and, slightly less in Blindmouth, The Pocket and Middle Pocket.

It is also timely to recall that the maps still do not tell the whole story. Most of the gaps that appear on the maps actually have a mosaic of smaller native and non-native vegetation clusters that have not been included. Any clumps smaller than 1 hectare, fence lines, riparian strips and roadside verges can all provide roost, shelter and food for wandering fauna. And these extend connectivity beyond distances that might appear likely or possible on the maps.

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The omission of these small clumps from consideration in the strategy would appear to be contrary to part 2.3 Guiding Principles (p13-14) of the strategy. The seventh dot point, “connectivity and restoration” provides specific recognition of “stepping stones that link existing habitat area.” Yet, the maps conspicuously avoid measuring this primary evidence of connectivity and, surprise, surprise, the maps misleadingly indicate a higher degree of fragmentation.

If a map is to be used in any way to express or imply the degree of connectivity or fragmentation in a landscape then it must also include plantations, orchards, especially native macadamias, crops and any weeds that can make a recognized contribution to connectivity.

There are a number of threatened species that owe their very survival to the material that the Byron BCS is treating as non-contributive gap. Those species directly dependent on Camphor Laurel includes the Rose Crowned, Wampoo and Superb Fruit Doves, and the Black Flying Fox.

The Red Legged Pademelon and the endangered Black Breasted Button Quail are two of the many species that now depend on Lantana for shelter. Low (p230) reports that in Queensland, an important factor in local extinctions of the Quail has been Black Stripped Wallabies disturbing their shelter on forest edges.

Low (p101,142) also reports that the Grass Owl’s preferred habitat is sugar cane while the Magpie Goose eats the cane plants themselves. And given the comparatively high density of Byron Shire’s rural settlement patterns we should not ignore the contribution of domestic gardens, orchards and compost bins. For if species are eating there then they clearly form part of the connectivity equation. This is best illustrated by Low (p109);

“The Powerful Owl, our heftiest night bird, a huge raptor with gleaming yellow eyes, is another animal mocking the experts by taking up city life. Naturalist David Fleay in 1968 described it as ‘highly nervous, exceptionally shy and wary’, and belonging to ‘the dense gullies of a timbered mountain habitat’. He’d be gobsmacked to know that today there are powerful owls in the middle of our two biggest cities. They perch over busy paths and cough up pellets of possum fur and bones. One of these owls first appeared in Melbourne’s Royal Botanic Gardens many years ago; the first sighting in Sydney’s gardens occurred in 2000. Scientists claim that powerful owls need vast territories of intact forest 300 to 1500 hectares in size. In Victoria they’re listed as an endangered species and in Queensland they’re rated vulnerable. They haven’t moved into Brisbane’s city gardens (yet) but they do use bushland reserves bounded by suburbia. Numbers in Brisbane are the highest they’ve been for a hundred years thanks probably to urban possums and bats. Sydney’s owls are known to take cats. Owls in forests do need vast territories, because food there isn’t as plentiful. Gardens and parks carry more meat on the branch per hectare, obviating the need to roam widely. The problem for urban owls is finding tree holes for nesting.”

A key point to be gleaned from this quote is that non-native vegetation, weeds and domesticated or commercialized vegetation can deliver significantly higher stocking rates for many threatened and non-threatened species. Note that the natural variation in stocking rate for the powerful owl is only five fold (300ha to 1500ha territory). But our botanic gardens demonstrate that modified nature can achieve a 30 fold variation in stocking rate (50ha to 1500ha).

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The 200 square metre front garden of my house in Manly, Brisbane, has 4 birds nests, a huge paper wasp nest and a resident possum at densities never observed on my 40 hectares in Main Arm. And local identity, Ron Priestley, who has recently moved into urban Byron after 20 years on a forested ridge-top in Main Arm expressed amazement at the number and diversity of species he can observe in his new back yard. (pers com 01/2003)

The observation by Mott ⁽⁶⁾ (ABC Radio, & “Trunklines”) of a preference by Koalas for the fresh green leaf tips found in well maintained (ie regularly thinned) regrowth stands over the less digestible foliage found in stressed, unthinned regrowth or old growth forest has not been contested. Active forest management can improve the health, nutritional value, stocking density and long term viability of Koala forest stands. And this has obvious implications for reducing adverse impacts (less susceptible to disease, less need to cross roads, dodge dogs etc) and enhancing growth and viability of Koala populations.

And Low (p111) reports that these are not isolated cases.

“All over the world, when transects are run from cities out to forests, the highest bird tallies often come not from forests but from bushy outer suburbs and variegated farmland. In Britain, notes urban ecologist OL Gilbert, ‘suburban gardens are believed to support the highest density of breeding birds of any habitat’. The Blackbird population in Oxford reaches twenty times the density of woodland blackbirds.”

And it must be recognized that the settlement patterns of Byron Shire exhibit some of the highest proportions of such “variegated farmland” found anywhere in Australia. And this has some very important policy implications for Byron Shire Council;

- 1 The capacity of small vegetation clusters to contribute to the connectivity value of habitat for both threatened and non-threatened species is a *relevant consideration* that must not be ignored if the powers that have been conferred on the Council are to be exercised in an appropriate manner.
- 2 The capacity of weeds, exotic plants, plantations, orchards and crops to contribute to the connectivity value of habitat for both threatened and non-threatened species is a *relevant consideration* that must not be ignored if the powers that have been conferred on the Council are to be exercised in an appropriate manner.
- 3 The capacity of weeds, exotic plants, plantations, orchards, crops and even pasture to provide direct, substitute habitat services for both threatened and non-threatened species is a *relevant consideration* that must not be ignored if the powers that have been conferred on the Council are to be exercised in an appropriate manner.
- 4 The capacity of a modified landscape comprising denser settlement in variegated farmland to produce outcomes that exceed the natural stocking densities of threatened and non-threatened species is a *relevant consideration* that must not be ignored if the powers that have been conferred on the Council are to be exercised in an appropriate manner.
- 5 The “Relative Ecological Value Matrix” must incorporate all *relevant considerations* if it is to avoid errors of omission and commission that render it a *misrepresentation of fact* to the policy process.[see below]

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Threats from residential and industrial development

This category has been listed in the strategy as an activity that can lead to losses in biodiversity but close examination reveals this to be an extremely low probability threat. The BSOE Report 2002 advises that in 2001 there were 29,000 permanent residents and 13,134 lots. This is an occupancy rate of only 2.2 people per lot compared to the national average of 2.7 per lot and is testimony to the 17% of the rate notices go to an out of shire address.

Some 30% of the lots are zoned rural so only 9,193 lots are zoned urban or industrial. Total dwelling approvals were 245, up from 141 the previous year and this represented an annual growth in dwellings/lots of only 1.86% pa. Unapproved dwellings could take this growth rate to about 2.5% but most of these are conversions of garages and sheds that do not require clearing, land filling or drainage works. If the 245 new dwellings are distributed in proportion to existing rural/urban lots then only 171 dwellings will be urban.

At the standard urban housing density of 10 per hectare, this equates to an annual demand for urban land of 17 hectares which is spread between the five major urban centres and a number of hamlets. This will average out at about 3 hectares for each centre per year.

Ocean Shores and Brunswick Heads still have a significant stock of vacant blocks so there is no medium term environmental pressure from housing expansion there. Bangalow and Mullumbimby both have significant stocks of cleared pasture and crop land on their margins so there is no foreseeable threat to habitat from housing expansion. Only Byron/Suffolk Park has insufficient cleared land on its margins to cope with current expansion rates. But it must also be noted that most of the demand for new dwellings in Byron is not on the rural margins but, rather, along the waterfront and hemmed in by parks and reserves. There is a potential for new sprawl in the Ewingsdale area but this, again, is an aesthetic problem not a habitat loss.

The remaining 74 odd new lots in the rural zone generally spread over existing cleared land so there is minimal realistic threat of habitat loss posed by residential or industrial development in Byron Shire. It is limited to Byron/Suffolk Park and all of this activity is subject to the discretion afforded through Council's existing planning powers. Any threat posed by this activity cannot be used to justify additional powers over land in other parts of the shire where there is no such reasonably foreseeable threat.

Threats from land filling, drainage and other earthworks

This is listed in the strategy as an activity that can cause losses in biodiversity but the actual incidence of it is minimal. It is generally associated with housing and industrial development and new road works and, again, these activities are fully subject to existing local and state planning controls which require measures to ensure ecological values are not reduced to a level that is inconsistent with the objects of the EPA Act 1977.

However, there are many examples around the country and shire where council approved works have created new wetland where none previously existed with a resulting increase in biodiversity values. They involve inadequate drainage structures under road works which, combined with increased run-off from nearby new housing or industrial estates, produces water-logging in adjacent pasture. The resulting difficulty in maintaining this pasture facilitates the introgression of wetland species, which, in turn, is then used as a pretext to deprive the owner of development rights to that portion of his land. This is clearly a detriment suffered as a consequence of negligent planning.

Threats from inappropriate fire management

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The only aspect of this issue that has had any consideration in the strategy is the risk to rainforest patches of fire from adjoining vegetation. It is solely focused on the exclusion of fire with only passing mention of the management for fire. And in light of the recent fires in Victoria and the ACT, it must be stated that the failure to address the full implications of fire management in this strategy is grossly negligent.

The threat to biodiversity posed by one or more midsummer wildfires in Byron Shire is five to ten orders of magnitude greater than that posed by any other listed threat. A 10,000 hectare fire in the contiguous western forest cluster is an entirely foreseeable event with a less than one in a hundred year probability of occurrence.

There is a widespread delusion in the shire that somehow the 'rain' in the word rainforest will prevent it from burning. This article of faith is only true in a wet season. It had some currency prior to settlement when the recognized comparative water surpluses exhibited by old growth forest, when manifest in rainforest gullies and shaded south facing slopes, were observed to seriously retard the spread of fires.

This is clearly no longer the case. The aerial photographs clearly establish that most of the current resource is regrowth. The recognized leader in the study of vegetation on water balance is Vertessy⁽⁷⁾ and his research has established that regrowth forests, especially unthinned ones, use much more water than old growth forests. So along with reduced water run-off, these forests pump their soils dry earlier between rainfall events.

This means that soil is dryer for longer in regrowth and a greater proportion of each rainfall event is used in replenishing the soil moisture profile. Competition between stems forces them to endure periods of water stress that are longer in regrowth than in adjoining old growth even though the actual time between rainfall events is the same for both. And this has major implications in the 40% of years that are in El-Nino events.

In most El-Nino droughts there will be enough rainforest or wet sclerophyll regrowth that survives to maintain the integrity of the forest stand. But to do this they will endure periods of up to 4 months when their combustibility is very similar to dry sclerophyll forest. In fact, they can often exceed that combustibility because they must shed correspondingly more leaf, branches and dead siblings to survive. And this fuel load, especially if stripped of all residual moisture by a smoke trail, can produce fires capable of complete forest destruction.

We have been extremely fortunate to not have had a major fire in the past 30 years but it is pure delusion to expect another 30 years of good luck. A major fire is very close to a statistical certainty and those in authority who fail to plan for such an event will need to work under the assumption that they will be required to explain their actions, in detail, to the coroner.

The last major fire traveled from Palmwoods to Upper Main Arm in a few hours. It leapt from the base of the escarpment to the top in under five minutes and, at 2 km distance, it sucked air into the vortex with the roar of a jet engine. These fires can jump over many of the more intimate gullies found in the hinterland and have the potential to inflict more ecological damage than the same fire would do in more southern locations.

Intense, 50 megajoule/m² plus, fires are capable of turning the top 5 to 10 centimetres into powder as they destroy all but the largest roots and all microbial activity in that zone. But unlike southern regions, our rainfall comes with a deluge, not a drizzle. And the resulting run-off from even a 500 hectare hot fire could turn our creek pools (and Wilson's Creek Dam) into hard clay pans that many subsequent floods will be unable to shift.

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Indeed, if only the top 25 millimetre's were washed away after only a 332 hectare hot fire in Upper Wilson's Creek, it would completely silt up Mullumbimby's 83ML water supply. So it is not just a high probability threat to biodiversity, it is a serious threat to a very important piece of community infrastructure. It should also be noted that the water yield, especially the critical dry season water yield, for this dam can be boosted considerably (by about 50%) by thinning the regrowth in the catchment. This is a very relevant consideration when seeking additional water to maintain downstream environmental flows.

The author was in Canberra only two days after the January fires and spoke to a number of farmers who had been burned out. One, David Coonan, confirmed that the fire traveled down a regrowth vegetated corridor that is now completely destroyed. No hazard reduction activities had taken place in this corridor but Mr Coonan advised that the only places they were able to halt the fire were places that had been thinned and stock allowed to graze. This is consistent with research on US forest fires that rarely passed through thinned regrowth that had also undergone hazard reduction. Fires still passed through stands that had only been thinned or only had hazard reduction but they survived while neglected regrowth was destroyed.

And this is the paradox for the Byron Biodiversity Strategy. The resource is mostly unthinned regrowth that faces a very high probability of very significant damage from fire in the next two decades. The close competition between stems in this sort of forest produces initial benefits through suppression of weeds that previously dominated the site. But continuation of this condition also prevents the re-establishment of under-storey species. Continuation of this condition also reduces stream flows below pre-settlement levels and impairs the viability of dependent riparian species.

The silvicultural thinning of these regrowth stands can restore moisture profiles to levels associated with old growth forest. Simply put, by halving the number of stems (in proportion to the original stock), each remaining stem has twice the available soil moisture. Some of this will be used in increased growth, some will be used by an enhanced under storey while the remainder will maintain moisture levels in the forest for longer. So the number of very high fire risk days is substantially reduced.

Of equal importance, the entire leaf and blossom based food chains receive a tremendous boost as all trees expand their leaf area to cope with the new moisture reserves. And this means a higher proportion of the succulent new leaves that all leaf munchers prefer. Less stress on the remaining trees means a lower production of their chemical defenses and a further improvement in digestibility and improved health and nutrition of dependent species. Florence, in "Ecology and Silviculture of Eucalypt Forests"⁽⁸⁾, has observed that maximum seed growth (and maximum blossoms) occurs in eucalypts whose crowns are expanding laterally to occupy a newly created gap. [Well, they would, wouldn't they?]

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For rainforest stands, in normal rainforest locations, the conditions will return to a point where fires will be suppressed. Winter hazard reduction burns simply will not burn and summer burns would present too much risk to surrounding vegetation. Wet sclerophyll regrowth will also return to old growth moisture profiles but will benefit from periodic hazard reduction burns that encourage germination of successional age classes.

And given the low propensity of local landowners to do anything with trees, one can safely conclude that this activity would not all be done at once. There are far too many off farm workers, absentee owners and plain bone idle in the district for that to happen. So any disturbance in these forests will be well dispersed in space and time to produce a truly megadiverse forest estate with a substantially reduced probability of megafire.

And this has some important policy implications that are *relevant considerations* for the strategy;

- 1 The most probable scale of a midsummer megafire is far in excess of any clearing activity that has taken place over the past three decades or is reasonably foreseeable in the shire over the next three decades.
- 2 The most probable extent of environmental destruction and loss of biodiversity from a midsummer megafire is far in excess of all other reasonably foreseeable threats to biodiversity over the next three decades.
- 3 The intensity of habitat destruction by megafire is significantly more concentrated, and therefore more enduring, than all other reasonably foreseeable threats to biodiversity.
- 4 Unthinned regrowth is the most fire-prone forest age class. For a number of months in four of every ten years it constitutes a “dangerous thing”, as defined under the criminal code, for which the general duty of care applies to those who are in effective control it.
- 5 Thinned regrowth will not prevent all fires but it is a “reasonable and practical step” that does reduce the frequency of fire events and does reduce the frequency and intensity of megafires.
- 6 The Shire’s TPO may have discouraged measures that can play a major part in protecting and enhancing biodiversity.
- 7 The BBC Strategy’s proposed prohibition of all clearing of regrowth classed as HCV (including the cutting of a single tree) will, if implemented, constitute the taking of effective control over a “dangerous thing”, and preclude measures that could play a critical role in protecting and enhancing biodiversity.
- 8 The BBC Strategy’s minimal consideration of the impact of wildfire on biodiversity values would, if implemented in it’s current form, constitute gross negligence and serious misconduct under the *Public Sector Employment and Management Act 2002*.
- 9 The BBC Strategy provides no material that could be regarded as having discharged all duties under, and applied all relevant best practice principles in, *The Subordinate Legislation Act 1989*.

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Threats from stock grazing pressures

This is listed in the strategy as an activity that can cause losses in biodiversity but the actual incidence of it is minimal. It is a pressure that has undergone a continuous and cumulative reduction over the past half century.

The photographic records indicate that a minimum of 12,500 hectares of former pasture is now covered by regrowth forest and Camphor Laurel. There is also a significant area, more than 1,000 hectares, that is dominated by weeds. The Tweed Lismore Rural Lands Protection Board levies rates on the basis of approximately one cow or horse per hectare. And while the Board's rates do not decline if pasture is replaced by regrowth, the actual carrying capacity certainly does. And this can only mean that the shire's cattle herd has been reduced by about 13,500 head (not counting young calves) over the past half century.

This represents a 33% reduction in cattle numbers over the approximate 40,000 herd in 1954. It should also be remembered that, as mentioned above, the weeds came first and the forest then invaded the weeds. It was the exclusion of cattle by weeds (mostly lantana) that allowed the regrowth seedlings to dominate. The only seedlings that appear to be capable of surviving in a grazed paddock are Camphor Laurel and Brush Box. The rest need the protection of weed barriers to become established and these weed barriers continue to protect the older, inner sections of forest stands.

And this has some important policy implications that are *relevant considerations* for the strategy;

- 1 A pressure that is undergoing a continuous reduction over half a century is clearly a diminishing threat to biodiversity.
- 2 A pressure that in most part merely impairs a forest's capacity to expand cannot, reasonably or lawfully, be described as a threat to biodiversity in established forests.

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Threats posed by pollution and contamination

This is listed in the strategy as an activity that can also cause losses in biodiversity but the actual incidence of it is minimal. Again, it is a pressure that has undergone a continuous and cumulative reduction over the past half century.

The major pollution/contamination issue in the shire is faecal contamination in water courses. The BSOE Report focuses on sewerage treatment of human waste and feedlot waste and much has been said of the leaking septic systems in the hills.

But the most relevant consideration over the past half century is the fact that some 13,500 cows are no longer urinating and defecating on our hillsides. The volumes involved are the equivalent of at least 135,000 humans wandering the pastured hills doing the same thing. And this is equivalent to about 260,000 humans doing the same thing in a forested landscape or about 780,000 people with underperforming septic systems. The current rural population of the shire is only 8,700 people and, if 10% of their septic systems were underperforming, they would have the impact of 14.5 cows.

There have been some fairly high stream faecal readings but these are not a function of supply but, rather, due to the substantially reduced stream flows from the vastly expanded regrowth forests. Supply has certainly undergone continuous decline in volume and impact. Most pasture is now confined to flat land and gentler slopes where manure has always lasted longer in situ and hence, is more likely to be broken down. Introduced dung beetles have also had a major impact.

This, along with improvements in farm chemical use and the reduction in the non-forest area on which chemicals are used, can lead to only one conclusion. The threat to biodiversity from pollution and contamination has undergone a very significant reduction in the shire over the past half century and there is no foreseeable risk of this trend being reversed.

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Threats from altered hydrological systems, increased nutrients, salinity and acid sulfate soil

This is listed in the strategy as an activity that can also cause losses in biodiversity but some of these situations can cancel each other out. These, too, are pressures that have undergone significant change over the past half century.

It is a general observation that the original conversion of forest to pasture will double the amount of surplus water, i.e. run-off and recharge to ground water flow systems (GFS). Overgrazed pasture can triple the volume but this condition is usually seasonal. The velocity of run-off also increases with a change to pasture.

The 1954 photographs clearly show Byron Shire at its point of minimal forest cover and from this we can state with almost absolute certainty that the stream and groundwater flows during the 1954 flood achieved volumes and velocity that are highly unlikely to ever be repeated.

If this level of vegetation cover had remained for the past fifty years then a number of GFS discharge sites may have appeared. But even this would not have been enough to produce a local salinity problem as the intensity of local rainfall would ensure that salts are regularly flushed through the system rather than gradually accumulated in the system.

It is, however, a fact of history that the vegetation cover has undergone a significant recovery and this has precluded the wide incidence of GFS discharge sites and ensured zero risk of salinity problems. Indeed, some catchments are actually exhibiting the opposite.

The extent of revegetation in Upper Wilson's Creek, Huonbrook and Upper Main Arm has major implications for water flows. Vertessy's research indicates that while conversion from old growth to pasture may double run-off volumes, broadscale regrowth can reduce run-off to approximately half the original old growth levels. This is particularly so in the dry months when competition between regrowth stems ensures that a greater proportion of each (smaller) rainfall event is used to restore soil moisture deficits instead of seeping into watercourses.

This phenomena has extended the normal range of dry season minimal flow events. In some cases these extended minimal flow events are achieving the ecological equivalent of transporting the riparian ecosystem a hundred kilometers inland to an 800mm rainfall zone. Clearly, this could have some serious life cyclical implications for some of our threatened frog species.

The implications for Wilson's Creek Dam are just as significant. When this facility was built, most of the privately owned land in the catchment was pasture. So approximately half of the catchment was operating at double the natural (old growth) run-off rate. This produced a whole of catchment efficiency of 150% of the natural rate. This explains the numerous anecdotal reports of no water shortages in the 1950's and 60's.

The subsequent revegetation of this land and the maintenance of this forest in an unthinned state has reduced the run-off from private land to only 50% of the natural rate. This is a 75% reduction from the cleared (1954) water yield and has resulted in a whole of catchment efficiency of only 75% of the natural run-off rate.

A number of State Forest compartments in this catchment were harvested over the past fifty years and we know that very little silviculture has been practiced in them since. So these stands will also be producing lower water yields and are likely to have reduced the whole of catchment efficiency to only 66% of the natural rate.

So it is in this context that additional water for down stream environmental flows is being sought. The resolution of these issues is not simply a question of how much of the remaining, diminished

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resource is to be used for environmental purposes. A number of important policy implications arise that are certainly *relevant considerations*;

- 1 The potential gains in water yield and stream flows from thinning of regrowth forest in the shire are well in excess of all demands for additional environmental flows.
- 2 Council has a duty to take all reasonable and practical steps to avoid the degradation of a public asset and maintain the value and utility of such assets.
- 3 Council must spend funds wisely on the most effective means of delivering services to the community and it should not expend funds on replacement infrastructure if the performance of existing infrastructure could reasonably and effectively be restored.
- 4 The Council's own planning measures, The TPO, may have contributed to the substantial reduction in the effectiveness and value of the Wilson's Creek Dam by discouraging silvicultural treatment in its catchment.
- 5 The BBC Strategy's proposed prohibition on any clearing (including the removal of a single tree) in areas of regrowth that have been designated as high or very high conservation value will preclude a range of measures that have minimal adverse impact but which can produce substantial biodiversity gains.

Threats from climate change and global warming

This is listed in the strategy as an activity that can cause losses in biodiversity and, don't fall off your chair, I agree.

The Author was the only private forest owner delegate to the CSIRO Workshop on the 'Impact of climate change on temperate forests 1999. The main conclusion from this conference was that the primary impact of global warming will be to increase the frequency of dry years and extend the length of dry periods. This will substantially increase the probability of megafires and increase the intensity of all fire events.

There will also be a commensurate reduction in the effective 'window of opportunity' for hazard reduction burning. And it will exacerbate all biodiversity impacts from reduced stream flows. It was generally agreed, and certainly not contested, that silvicultural adjustments to tree density in regrowth forests could substantially reduce the severity of climate change impacts.

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Threats from roads, traffic and transport infrastructure with erosion & sedimentation

There is little room for doubt that, apart from massive forest expansion, the next most important change to the physical landscape of the shire over the past five decades has been the construction of the Pacific Motorway. And one can take no pleasure in reflecting on how a new bridge on the Brunswick will erase all resonance of the gleeful shrieks of a bare foot boy who caught his first fish on those, then, idyllic banks.

These impacts are being thoroughly aired elsewhere and it is more appropriate to concentrate on impacts that are not so well aired. It is the research of Vertessy that turns out focus to unpaved roads. Vertessy's team at the CRC For Catchment Hydrology examined the sediment loads from various parts of a harvested forest. He found that there was a ten fold increase in sediment per m³ from a general harvest area to a 'snig track' and another ten fold increase in sediment from an unpaved road.

Put another way, the sediment from 100 metres of gravel road was the same as from five hectares of clear-felled forest. The more traffic churned the gravel surface and separated the fine particles the higher the sediment load became. The steeper the grade the higher the sediment load. Most forestry codes of practice pay particular attention to ensure that run-off from roads is filtered through vegetation before it gets to a creek. But no such caution appears to apply to unpaved council roads.

Eroded road base is a major component of the increased sedimentation in our creeks and rivers that, along with reduced run-off from regrowth catchments is placing riparian ecosystems under pressure. This is clearly visible during any flash storm and a clear idea of the sort of volumes involved can be gained from council's records on annual consumption of quarry material.

Yet, despite a more than trebling of population in Upper Main Arm since 1970, there has been no extension of the bitumen seal since that date. A similar story is repeated elsewhere in the shire.

This has been exacerbated by a more recent preference for houses high on hills with steep private access roads and a corresponding reluctance, on the part of more recent arrivals, to adopt the traditional practice of getting out in the monsoon with a hoe to turn off newly forming ruts before they do extensive damage to the gravel surface. A simple campaign to encourage a return to this practice will save hundreds of metres of road base. Subsidising the cost of bitumen, provided it goes on the steepest portions of private roads will prevent even more sediment in our creeks.

It should also be noted that the quality of roadbase has declined over the past half century. Gravel roads in high rainfall areas need a good proportion of clay to bind the heavier material. This clay has traditionally come from areas close to the surface. But council appears to have restricted the expansion of quarry areas (including it's own) and discouraged new quarry sites where clay can be incorporated into the mix and this has forced quarry operators to use more bedrock and heavier rock crushers. The resulting roadbase consists of two or three sizes of aggregate and a lot of fine dust which is easily washed away in a storm.

It is another good example of the 'road to hell' being paved with good environmental intentions. And it is worth noting that the money the council has wasted on legal fees, for the ultimately futile persecution of a quarry owner in Palmwoods, could have bitumened all council's gravel roads in Main Arm.

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The critical points in terms of stream health are the approaches to creek crossings (where run-off goes directly into the stream) and steep slopes where run-off gains velocity to carve out large ruts that then cut through vegetative filters. The SOE Report does not record the number of crossings with unpaved approaches or the length of steep unpaved road. But it certainly should.

There are a number of previous Platypus pools in Main Arm that are now full of gravel. And despite there being extended periods of only underground flow, there have been no authorized gravel removals from these sites. I understand that all local debate on this issue was limited to abstract absolutes where the impact of simultaneous removal from all holes in one season was considered to be too high. The simple, low impact, high benefit, sustainable option of 'one hole per season' extractions appears to have never been considered.

So these systems have no measures to prevent the major sediment inputs and no measures to deal with the accumulated evidence of this failure. And clearly, the Platypus, Cray Fish, Shrimps and Gudgeons are not impressed and have voted with their fins and flaps. And this raises some important policy implications that are *relevant considerations* for the strategy;

- 1 Given the extensive revegetation that has taken place in the upper catchments, the dearth of clearing activity and the decline in the area under cultivation over the past half century, one can only conclude that unpaved roads are the primary source of sedimentation in our creeks and rivers.
- 2 The rate at which gravel roads are being paved (zero) is well below the rate at which population is increasing and this increased use is increasing the delivery of sediment to watercourses.
- 3 A modest 10mm rainfall event in November will, if it falls on the 100 metre paved approaches and drains each side of a creek crossing, will deliver about 12 tonnes of clean water to the creek and refresh a number of pools as it flows through. The same rainfall over 100 hectares of regrowth forest will yield nothing. It will all be used up replenishing the soil moisture deficit.
- 4 The roadbase that enters our creeks costs about \$15/m³ and it undergoes conversion through tumbling etc into a product that retails at \$45/m³. Hello, is anyone home? Ecology can pay.
- 5 New quarries and, where possible, expanded existing ones will improve the quality of roadbase and reduce the volume of sediment in our watercourses.

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Threats from introduction of exotic and invasive non-native plants and animals

This is listed in the strategy as a threat that can reduce biodiversity but, the reality on the ground indicates that this is both a threat and an opportunity. Care must be taken to ensure that the benefits are not lost when the threat is diminished.

The fact that weeds first dominated sites that are now forested has been mentioned above. History has shown that the initial weed invasion was, in fact, delivering a benefit. Numerous species, including the endangered Black Breasted Button Quail now rely on Lantana and it also appears to be the preferred re-establishment site of the Black Walnut. The Wampoo, Rose Crowned and Superb Fruit Doves, along with the Fig Parrot, the Barred Cuckoo Shrike, the Black Flying Fox and the Eastern Tube Nosed Bat, now rely on Camphor Laurel.

Weed barriers to grazing stock were critical in allowing native forest to subsequently invade and dominate sites. Today there is still at least 2,600 hectares (1,555ha RF with Camphor & 1,035ha Wattle mixed regrowth) of work in progress where areas appear to have been classed as forest on the basis of more than 20% canopy cover but which are primarily covered in lantana. [see below, Mapping]

These sites are not well served by the complete removal of weeds, especially if stock and wallabies have access to the site. A dense outer barrier of Lantana is still cheaper than a fence. The lowest cost, lowest input and lowest maintenance method is to spot clear and plant sufficient trees behind the barrier to achieve a closed canopy in early maturity (i.e. <100 stems/ha). These stems will shade the surrounding weeds, weaken them, and make their ultimate removal much easier and cheaper.

To date there does not appear to be any new species that are able to invade Lantana as well as native forest does. Camphor Laurel does not grow well in established native regrowth and the areas where Camphor appears to have invaded rainforest have, in fact, been jointly invaded by both types. The seeds of both are distributed, randomly, by birds and flying foxes etc.

The next most common weed, Crofton Weed, is usually a precursor to domination by Lantana. Most other weed infestations appear to be localized exploitation of water surpluses from shed roofs and drains.

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Threats from recreational pressures

The most commonly complained about recreational pressure would be kids on trail bikes. But the main impact of this is the noise nuisance rather than any on-ground environmental impact. Indeed, some of them can provide a useful service. One such neighbour has ensured that our most important ridge top fire break has not needed leaf and trash removal for more than fifteen years. And, thankfully, they are generally too lazy to get off the bike to shift a tree head so they can usually be herded into routes that justify their presence.

Our family also has first hand experience of other recreational pressures. Our irrigation dam has served as a neighbourhood swimming hole since its construction in 1955. But during this time the local population has trebled and the increasing transience of this population has meant that basically anyone who's former spouse or house mate may have lived in the area over the past three decades feels they now have a right of trespass.

Meanwhile over the same period the dry season creek flows have, as mentioned above, been substantially diminished by the expansion of regrowth forest. And this has placed an additional burden on the pool as it has become the primary nursery for replenishing less permanent downstream pools with the full range of aquatic species each wet season.

It has been observed that regular low impact swimming plays an important part in circulating water layers in dry weather. This aerates warm, stagnant upper layers and minimizes algal growth. However, the pool is much shallower than in the past so it now only takes two car loads of 'twenty somethings' to produce significant turbidity (visibility less than 30cm). To date, this problem of overuse has been addressed by that most useful of environmental management tools, verbal abuse.

But there is a clear demand for freshwater swimming venues that is not being met. And there are a number of pools, former pools and potential pools that could be enhanced at minimal cost to meet this need while improving the number and viability of freshwater habitats. Council should develop a policy to integrate freshwater recreational and environmental objectives in a sustainable manner.

It should be implemented at a neighbourhood scale to maximize stewardship. It should include small scale weirs and removal of excess sediment loads in a manner that does not impair the life cycles of aquatic species.

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Notes on mapping

There is about 2,600 hectares of vegetation that appears to have been recorded as forest on the basis of having only a bit more than 20% canopy cover. My own and adjoining properties have gullies mapped as rainforest when the dominant feature is Lantana. The presence of a few Blue Figs, Brush box and Maccaranga is apparently sufficient justification for this classification.

The appropriateness of using this threshold in a region where pre-settlement canopy cover was 90 to 100% is open to serious question. The 20% threshold was developed for the National Forest Inventory for the express purpose of delineating between open woodland and arid grassland. This was in the established context of the Carnahan System of classifying forest types, i.e. Tall Closed Forest, Medium Open Forest and Low Open Woodland.

It was never intended that someone would use this definition to claim that 20% canopy cover could constitute a rainforest as the term, 'rainforest' is normally associated with a closed canopy. It is also contrary to legal precedent and interpretive practice. The NSW vegetation legislation does not distinguish between degrees of native cover. It excludes the non-native portion of vegetation, concerning itself with the 'native, portion of vegetation rather than the whole forest.

But other states have taken a broader, map based, approach that considers forest composition in determining areas where measures will apply. Victoria's clearing controls only apply to forest that is more than 50% native forest. Queensland distinguishes between 'remnant' vegetation and 'non-remnant' (regrowth or exotic). And it has applied a test of degree so that remnant forest must cover 50% of its normal extent and reach 70% of its normal height. And this information is then entered on a map which determines the area of land to which the relevant measures apply.

This distinction has not been made arbitrarily. It is the distinction that would satisfy the fundamental legal test of substantiation. That is, 'is it more forest than non-forest?' 'What is the dominant feature?' And, 'is that feature normally associated with the claimed description?'

The use of a substantiation test will not remove any protection that is currently accorded to the native portion of a vegetation cluster. But if a general description of vegetation is to be entered on a map and the map is used for the purpose of implementing a range of planning measures over an area of land (an interest in land), rather than over a particular vegetation type, then a more precise definition must be used.

Clearly, a gully that is 80% Lantana (*a relevant consideration*) and 20% mixed native species, some of which are found in rainforest, then it is more Lantana than Rainforest. It would only become a rainforest when the main feature of a rainforest, a closed canopy, is more present than absent. That is, when canopy cover is more than 50% of the area and when species unique to rainforest comprise more than 50% of that canopy.

The maps used by the council in implementing measures under the BBC Strategy must comply with the principles set down in *Sec 5 of the Administrative Decisions (Judicial Review) Act 1997*. They may not;

- (b) "fail to take relevant considerations into account in the exercise of a power" or
- (f) "exercise a discretionary power in accordance with a rule or policy without regard to the merits of the particular case"

Notes on No Net Loss

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It is no small irony that the majority of the landholdings to which this policy will apply have exhibited considerable **net gain** for half a century. Yet, the strategy's concept of no net loss does not even consider any new trees that may have been established in the period between the implementation of the strategy and the consideration of the development application.

On one hand council can brag about it's "no net loss" policy that ties approval for each dwelling on a new community title application on the planting of 900 additional trees. But on the other hand it is planning to extinguish development rights on other holdings that have already delivered from 9,000 to 90,000 trees. Shouldn't this amount to a moral claim to ten to a hundred extra dwellings?

This is a clear breach of the "no disadvantage rule" that has been incorporated into such key policy areas as carbon trading etc. The 'no disadvantage rule', ensures that people who voluntarily make desired changes to their activities **before** a new policy is implemented do not suffer any disadvantage to the people who only make the desired response **after** being compelled to do so by the new policy.

Clearly, any principle that incorporates the concept of a net outcome must consider gains and losses. A principle that only incorporates subsequent gains and proposed losses cannot constitute a net result. Whenever previous changes have a material bearing on present circumstances, all gains and all losses must be considered if the policy is to lead to the proper exercise of a power.

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Notes on equity

There is no avoiding the fact that the major burden associated with the BBC Strategy is to be borne by the landowners who have already done most to reduce the threat to biodiversity in Byron Shire. The landholdings that have undergone the greatest expansion in forest area, that have re-established the most connectivity, that now exhibit the least fragmentation, are the holdings that are to have the most of their possible futures 'eaten' by the strategy.

It is self evident that the declaration of areas of the shire as areas of high, or very high nature conservation value is clearly intended to reduce the number and scope of future development options on subject land. And we have first hand examples of where the current real estate market in the broader region has discounted property values (prior to the most recent price increases) by about \$100,000 per land title.

This amount is the difference between the existing measure, the shire wide TPO where trees can only be cut with prior consent, and the new measure that will exclude entire classes of development. Neither may control existing uses but the former merely deals with vegetation while the latter deals with *interests in land*, i.e. uses to which land may lawfully be put. And this distinction involves a fundamental difference between those lands that are, and are not subject to the new measure. And the market has valued that distinction at \$100,000 per title.

This reduction in future options available to subject land is part of an understandable broader planning policy to "ration" development in a manner that both the community and the environment can cope with. But the use of a zoning system to ration future options betrays the most fundamental attribute of an effective, rationing system. That is, that **the burdens, shortages and benefits of a rationing system should be shared equally among all participants.**

Byron Shire Council has made a number of public statements that would, at first, appear to indicate a very strong support for this position. We note that the BBC Strategy states that "biodiversity is everyone's business". And council's web site states that council's core principles are "*Sustainability, Equity, Integrity, Openness, Participation and Efficiency*". But one must look long and hard to find any consideration of equity in the BBC Strategy.

These principles are not there as the result of a passing whim of councilors. They are a deeply rooted community obligation based in common law and statutory prescriptions. And, contrary to what many sectional interests may prefer, these are not simply elements of some sort of computerized drop down menu where desired levels of each principle can be selected with the click of a mouse. There is only one acceptable option in their application, "all of the above".

Yet, long after the strategy is implemented, the council will continue approving new lots, at the rate of about 2% of current lot numbers (245 added to 13,134), to holdings that have made minimal contribution to expanding habitat, improving connectivity or reducing fragmentation.

The shire wide median home value in 6/2002 was \$275,000, with \$400,000 in Byron. This median would currently be closer to \$320,000 and this would put the value of a new title at about half, or \$160,000. If one deducts infrastructure costs and charges of about \$60,000 then the opportunity value of a new lot is about \$100,000 each.

Compare this with the \$10,000 price for exactly the same sort of council service by Inglewood Shire Council (S.W. Qld) and we get a clear idea of the real costs associated with this service delivery. The difference in prices between Byron and Inglewood is a function of distorted demand, distorted supply and distorted margins.

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The growth in new lots is skewed towards Byron and Suffolk Park and this means that the value of new lots will be higher than the shire median. Building costs are essentially the same so if we deduct the \$160,000 cost of a new house and the \$60,000 in fees and charges then the remaining opportunity value of the new lot in Byron is \$180,000 instead of the shire median of \$100,000.

This means that the average opportunity value of a new lot could easily be in the order of \$135,000 each. And at this price, the normal 250 odd new approvals that council hands out each year will have an opportunity value of about \$33 million. This is roughly equal to councils entire revenue from rates, charges and grants. **The financial gain that council gives to about two dozen applicants is equal to all the benefits and services it provides to the whole shire.**

It is clear that this is not simply an issue of tree burdens verses development benefits. For the entire community is currently expected to sit quietly on their own property until this months cashed up spiv from the city is ready to exploit 'his' newly discovered opportunity. He will throw the necessary funds at his lawyers to maximize the amount of benefit 'our' council will be forced by law to approve for him.

The returns he will make are far in excess of any risk he has assumed because the council's "rationing system" has institutionalized a structural scarcity and a permanent undersupply of housing lots. He then brags about his profits to all his mates and this constant supply of new spivs ensures housing price increases that local first homeowners, (our kids, not theirs) cannot afford.

Every attempt at limiting the impact of this development cycle on our local amenity is broadcast widely and only attracts more participants. Every new limitation on development merely concentrates development in the places that are least able to cope, causing more collateral damage.

Many in the 'green' movement recognize this situation but few understand that it is caused by a comprehensive failure to integrate ecology with equity. This shire is demonstrating that ecology without equity is just a greener shade of hell.

It is doing so by failing to get close enough to the actual situation on the ground, by dealing in abstract rather than reality. It does not recognize the full suite of ecological values that attach to a range of vegetation. It pretends that nothing beneficial has happened in the past half century. It overstates the extent of threats and then seeks some sort of 'noble old growth' refuge from development rather than seeking to capture and redistribute the council created profit margins that drive this development.

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Transferable Development Credits - the equitable development solution

Inglewood Shire, like Byron Shire thirty years ago, does not need a system for rationing development. Demand and supply of new lots is minimal and, consequently, there is no opportunity value attached to new lots. The small variance between lot costs and the sales price is the modest consideration for the developers risk and enterprise. Understandably, there are no equity issues and few development burdens so any investment is a welcome investment.

But it is with this sort of inherited planning framework that rapidly urbanizing shires have been trying, unsuccessfully, to operate as a rationing system. Effective rationing systems can interface with effective planning systems but it must be recognized that they are two systems that need to work together. A planning system that attempts to cross dress as a rationing system merely ends up as a drag.

A council can only create new lots from existing ones. So it follows that if council is to ration development on the basis of, say, 2% annual growth, then it should apportion those development benefits equally to all current lot owners. They do, after all, already have the burdens apportioned amongst them equally. They are all stuck in the traffic jam.

The instrument for this distribution could take the form of a transferable development credit issued annually to the community and each lot holder. If, for example, council has 13,000 lots and chose to manage growth at a 2% annual rate then it would issue sufficient development credits for 260 new lots each year. Individuals could either sell their credits each year or save them for later use on either their own or someone else's project. It would then be up to a developer to either save up, purchase or form a partnership with sufficient credits to cover their proposed project.

In this way, landowners who have their future development rights restricted under the planning system will still receive their share of the transferable development credits under the rationing system. The rationing system could recognize the three elements of sustainability, community, economy and environment, by allocating a portion of the credits to the groups that make a healthy community function and another portion to the environment.

In this way, owners of high conservation value habitat could get credits for their lot, like all other lot owners, and extra credits for each hectare of habitat they maintain. Landowners without habitat would very soon be asking, "which bit of connectivity do you want restored"? And Meals on Wheels, for example, could get credits that can be sold each year to help cover the cost of their essential community service.

Council itself would also need an allocation, as part of the community's portion, to cover the administrative costs involved in maintaining the system and operating the 'exchange'.

There would still need to be some sort of recognition in the credit system for the enterprise and risk exposure of the developer. And this may mean that all credits are split four ways. That is, a quarter each to lot holders, community and environment and a fourth quarter that is released by the planning system to the successful development applicant.

If 1000 credits are needed for each of 260 new lots then 260,000 credits would be issued each year. They would have an opportunity value of about \$35 million or about \$134 each. A quarter of these, 65,000 would go to the 13,000 existing lot owners (5 credits each worth \$673). Ratepayers could either accumulate these credits for future subdivision of their own or sell them.

The environmental portion (65,000) would go to the owners of 12,500 hectares of native forest and 500 odd hectares of wetland etc who's development rights have been reduced by planning measures (5 credits per hectare worth \$673/year). As Camphor Laurel now supports at least 7 threatened

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species there may be a case for adding this resource to the pool but only if future development rights are relinquished.

Essential community service groups would share 65,000 credits worth \$8.75 million each year with most of these sold on the open exchange to cover budgets. The council may need up to 10% of the total (\$3.5 million) to administer the system and allocate resources between community groups.

There may need to be a capacity for advancing credits to development applicants in cases of hardship. A good example of this need might be the all-too-common instance where a property in a divorce settlement has insufficient credits to divide the lot but neither party can afford to purchase the other's interest. A subdivision could still take place but the lots remain in 'deficit'. Credits would still be issued to the original lot but are allocated to the deficit (i.e. cannot be sold) until the new lot has been accounted for. After returning to surplus both lots would then accumulate credits.

Such a system of 'deficit' release may also be used to bring the substantial number of unauthorized (non-rate paying) dwellings into the system in a manner that does not disadvantage the lawful majority.

Moreover, the shire community will get to vote with their credits. If they do not like a particular development proposal then it may face difficulty attracting enough credits or it may need to pay a premium that makes the proposal less attractive. Other proposals may attract a surplus of credits (rental housing for single parents) and be slightly discounted from the market.

In the long term such a system will take the destructive heat out of the development market. Most of the opportunity value attached to lots will be maintained but this value will be equitably distributed. The demand for new lots will come back to the community's capacity to supply and a more efficient market for credits may see their value decline slightly over time. There may be some initial hoarding of credits but the 'enterprise' portion and the 'community' portions will ensure that new lot approvals do not fall as low as the 2001 level of 141 lots.

Lip service will no longer be paid to the most neglected principle of sustainability, "improved valuation and pricing of (habitat) natural resources". The market will be sent a very clear signal that the key to the spoils of development is maintaining biodiversity. And there will be no such thing as a grumpy old forest owner.

Please consider.

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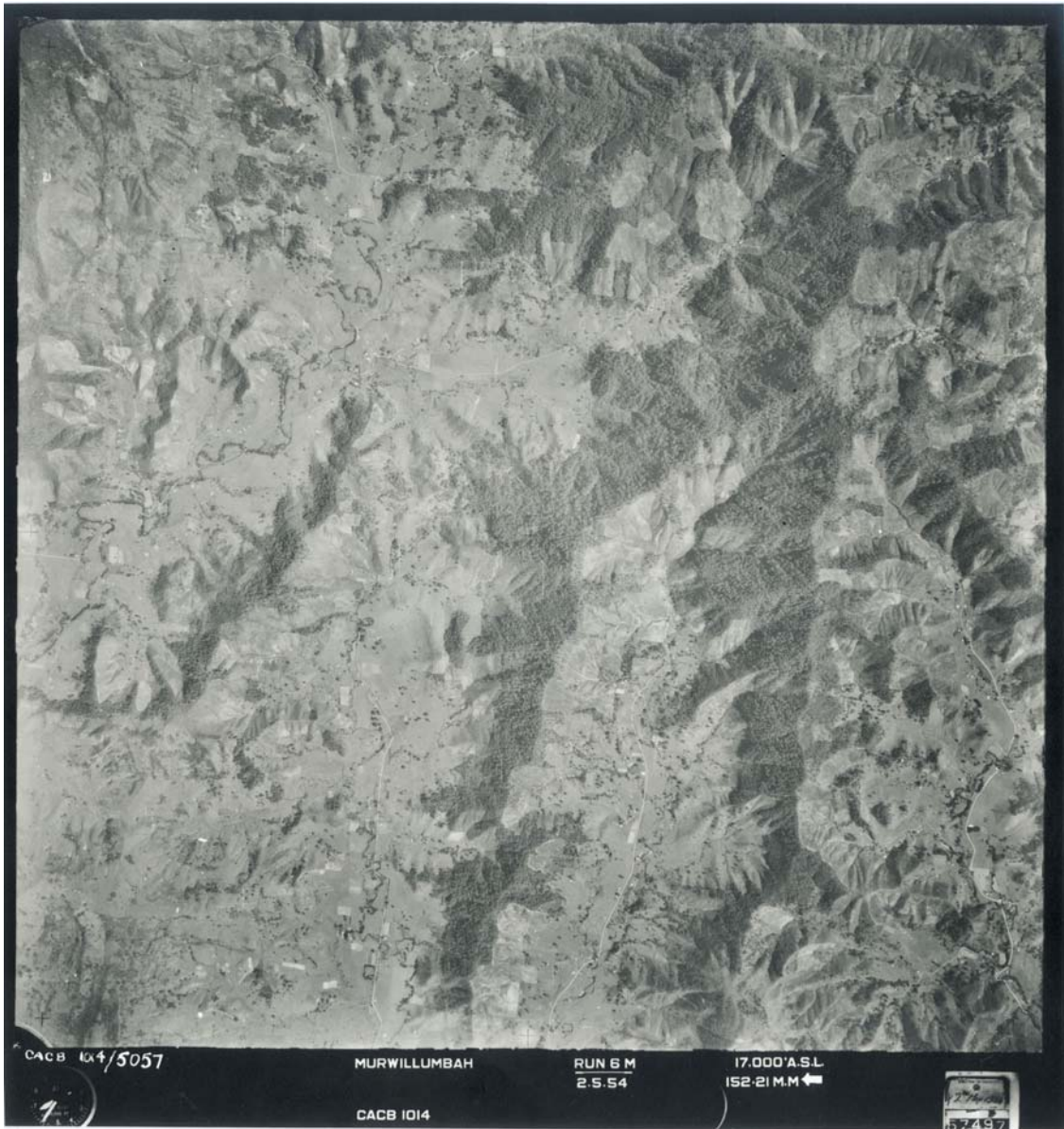
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Appendix I

Main Arm, Blindmouth, The Pocket & Middle Pocket, 1954 (North →)



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Appendix II

Upper Main Arm, Palmwoods & part Upper Wilson's Creek, 1954 (North →)



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