Maules Creek & Leard Forest Coal Mines

Assessment of the Environmental and Social Values and Community Concerns of the Maules Creek Community Council

Evaluation of the Potential Loss for Compensation Purposes

Researched and prepared by:

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Overrider

As the social discipline of economics has had many paradigm shifts during the last 150 years, any peer review of this report must be undertaken with the express consent of the author, and a surety given that the reviewer is indeed a peer of the dominant discipline of the author, namely Land Economics, or Ecological Economics. Many universities in Australia now offer courses in land economics, among them, Melbourne University, and the University of Western Sydney. It may be sufficient to satisfy any concerns that the methodologies used herein have been published in both the relevant peer reviewed journals, the Elsevier Journal of Ecological Economics, and the Australian and New Zealand Property Journal. The author's PhD thesis has been downloaded 3580 times to 89 distinct countries with countless citations.

Contents

1.0 Executive Summary

The community of Maules Creek, 20km NE of Boggabri in central western NSW is being impacted by several open cut coal mines nearby, such that they feel threatened by the flow on and cumulative effects, health and environmental, of the activities. Representations to the mining companies proposing that the mining be conducted underground, have been generally rejected as too costly.

Also, of immediate and on-going concern, but difficult to quantify without sufficient time to prepare a longitudinal study, is the effect on property values in Maules Creek.

The mining complex will impact by clearing all native vegetation from about 4700 hectares of land, some of which is a critically endangered ecological community.

Accordingly, the community of Maules Creek do not see any Net Social Benefit (NSB) accruing to them, or any tangible attempt to internalise what are significant negative exernalities.

The ecosystem goods and services lost due to the clearing of the forest have been valued at some $490,000 per annum. These ecosystem goods and services fall into one of four categories:

- Stabilisation Services
- Regeneration Services
- Production of Goods
- Life fulfilling Services

Some of which are vital, others necessary, useful or desirable.

It is proposed that the Maules Creek Community be compensated, and the negative externalities internalised, by the establishment of two funds to be run for the lifetime of the mines, and after. It is proposed that one fund be designed to offset the environmental impacts; and the other to accommodate impacts to amenity, predicted detrimental changes to property prices and cumulative impacts".

Both of the mechanisms proposed for the funds are based on an empirical database, namely, real property values.

2.0 Introduction

Curtis NRA was engaged by Maules Creek Community Council Inc (MCCC) in a letter dated 18th September 2011, and emailed 19th September.

The principal of Curtis NRA, Dr Ian Curtis, visited Boggabri on Wednesday/Thursday 21/22nd September, and met with members of the MCCC, followed by a meeting with the environmental manager and the general manager of Boggabri Mines.

The purpose of the meeting was to discuss how the impacts of the mines on both the community and the environment, including clearing of the native vegetation in Leard State Forest could be compensated. These impacts are termed 'negative externalities', and they have been quantified a number of times in the various Environmental Assessments required to gain approval. In strict economic terms, the only way to internalise a negative externality is to internalise it, by compensating the affected parties.

The MCCC do not see any Net Social Benefit (NSB) accruing to their community, which is the most directly affected, by a combination of noise; airborne particulate matter (with associated health risks); traffic disruption; loss of ecological services through clearing of native vegetation; reduction in property values; and, loss of quality of life in what was predominantly a quiet rural setting.

The MCCC propose that two funds be established and funded by the all of the mines in the complex to compensate them for the losses. Such a plan would see a NSB for the community and landholders. The funds proposed are an 'Environment Fund', and a 'Community Fund', the former designed to offset the loss of ecological services and environmental 'goods', by instituting environmental projects possibly in conjunction with the Namoi CMA; and the latter for the proper management of cumulative impacts.

3.0 The Land and the Landowners

The Maules Creek community is located about 20kms north east of the town of Boggabri in Central Western NSW, in a geographical and climatic region described as the North Western Central Slopes and Plains. Under the Interim Bio-geographic Regionalisation of Australia (IBRA), the larger region is known as the 'Brigalow Belt South' (BBS) after Thackway & Cresswell 1995, which extends south from the Queensland border. Under IBRA, the protection levels in this bioregion are in the range 0.01% – 5%, while anecdotally, it is thought to be around 1% – 2%.

The land around Maules Creek is generally flat, and comprises deep black soils of basaltic origin. Agricultural pursuits include cropping, and cattle grazing where the land is more undulating as it approaches the foothills of Mt Kaputar. The area is quite scenic, as can be imagined from reading this excerpt from a recent tourist brochure:

"After you cross the Harparary Bridge, take the Maules Creek Road and head for 'the hills'. Maules Creek is situated at the foothills of the Mt Kaputar National Park and is truly amazing countryside. The rugged enchanting landscape hides a deep rich black soil, perfectly suited to farming. As a result the region harbours some of the country's leading cattle. Water flows from the mountains, trickling through Melaleuca lined creeks to arrive as clear as crystal. Many beautiful locations along the river provide captivating hideaways to have a picnic or just enjoy the presence of nature. The size and grandeur of the Nandewar Ranges viewed from the Maules Creek area is spectacular."

Present population[1] is about 183 people comprising some 73 families, a few of which have been landholders there upwards of 100 years, to 150 years. Every person is affected by the current and proposed mining activities to varying extents, as can be seen from the 15yr Noise Assessment map (Figure 1 in Section 5), with Private Residences shown as solid blue squares. Up to fifteen landholders whose properties directly abutted the mine have been bought out, resulting in the loss of some vital skill sets and community contributions.

Anecdotal evidence from one current and continuing landholder located well up the valley from the mine throws some level of doubt about the veracity of the Noise Assessment, as the low drone from machinery could be heard overnight due to an inversion sitting low over the valley. The air quality and noise consultants present at the recent Aston Resources open day (22nd September 2011) in Boggabri confirmed this and agreed that the modelling shows that there would be an inversion layer over Maules Creek 41% of the time generally and 69% in winter. This is a serious concern for human comfort and health.

[1] 2006 Census

4.0 Leard State Forest

Leard State Forest is 8134 hectares in extent, and is described as 'Grassy Box Woodland' in more or less original condition, with little sign of any recent cypress pine thinning activity by NSW State Forests.

Grassy Box Woodland consists of a diverse mix of species including grass and herbaceous species, however dominated by White Box (Eucalyptus Albens), Yellow Box (E. Melliodora), and Blakeley's Red Gum (E. Blakelyi). Shrubs are generally absent; hence the appearance of the community is described as 'park-like'.

Other species that can occur in association with this ecological community are: Western Grey Box (E. microcarpa); Coastal Grey Box (E. mollucanna); Fuzzy Box (E conica); Apple Box (E. Bridgesiana); Red Box (E. Polyanthemos); Red Stringybark (E. Macrorhyncha); Long-leaved Box (E. Goniocalyx); New England Stringybark (E. Calignosa); Brittle Gum (E. Mannifera); Candlebark (E. Rubida); Argyle Apple (E. Cinera); White Cypress Pine (Callitris glaucophylla); Black Cyprus Pine (C. enderlichi); Kurrajong (Brachyciton populneus), and Drooping Sheoak (Allocasuarina verticillata).

Once widespread in the eastern states of Australia, Grassy Box Woodlands and Derived Grasslands[2] are now rare, with less than 5% remaining in good condition. Accordingly Grassy Box Woodlands are listed as 'critically endangered' under the Environment Protection and Biodiversity Conservation (EPBC) Act 1999, and also the NSW Threatened Species Conservation Act. Moreover, in 2008 to 2010, under the Federal Government's 'Caring for Our Country' initiative, five rounds of 'reverse auctions' were conducted in a Market-Based Incentive program (MBI), resulting in some 27,000 hectares being protected under 201 independent land managers. The National Heritage Trust has also allocated twenty million dollars for recovery plans for this, and one other ecological community.

More information about this ecological community can be found on the 'Grassy Box Woodland Conservation Network website www.gbwcmn.net.au/about

[2] Derived Grasslands are described as formerly Grassy Box Woodlands with the trees removed.

5.0 The Coal Mines

The coal mines currently operating in and bordering Leard State Forest are currently overall in the ownership of minority foreign owned corporations. As shareholdings are complex, including a number of nominee companies, the best guess has been about 36.3% foreign owned. The main players are:

1. **Boggabri Coal**: 100% Japanese owned by Idemitsu.
2. **Aston Resources**: 35% owned by Nathan Tinkler.
3. **Tarrawonga**: 30% Idemitsu, 70% Whitehaven.

The Tarrawonga Modification lies to the south of Boggabri coal mine, with the Tarrawonga extension further south. The Goonbi Coal Project lies to the east of The Tarrawonga Modification (see Figure 2).

All of the coal mines involved have undertaken to, or been required to put strict controls in place to ensure the cumulative effects of their operations are manageable under an Environmental Management Strategy. In some cases Environmental Management Plans (EMPs) have been prepared and put in place, and in other cases, prepared prior to being put in place.

The operating mines have undertaken a range of offset measures, including revegetation surrounding the mines, and the purchase of offset land of approximate commensurability to that cleared, although there is the concern that much of the offset land is ‘derived grasslands’. Boggabri Mine claim to have had their contribution to offsetting increased several times by Government, and it currently stands at 6:1. Nevertheless, it will be many decades before ‘derived grasslands’ will again resemble a forest with equivalent biomass and biodiversity to that removed.

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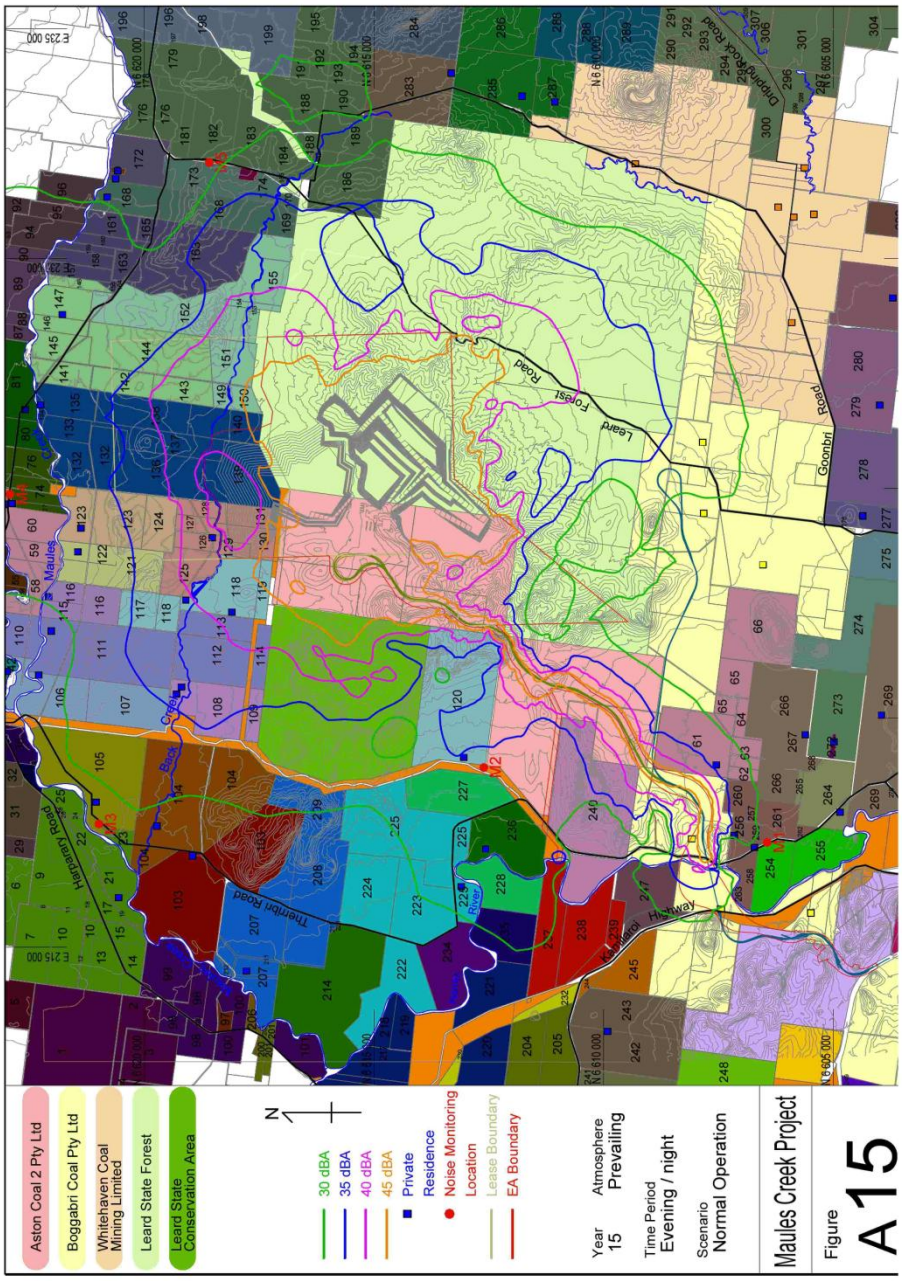

Fig 1. 15yr Noise Assessment

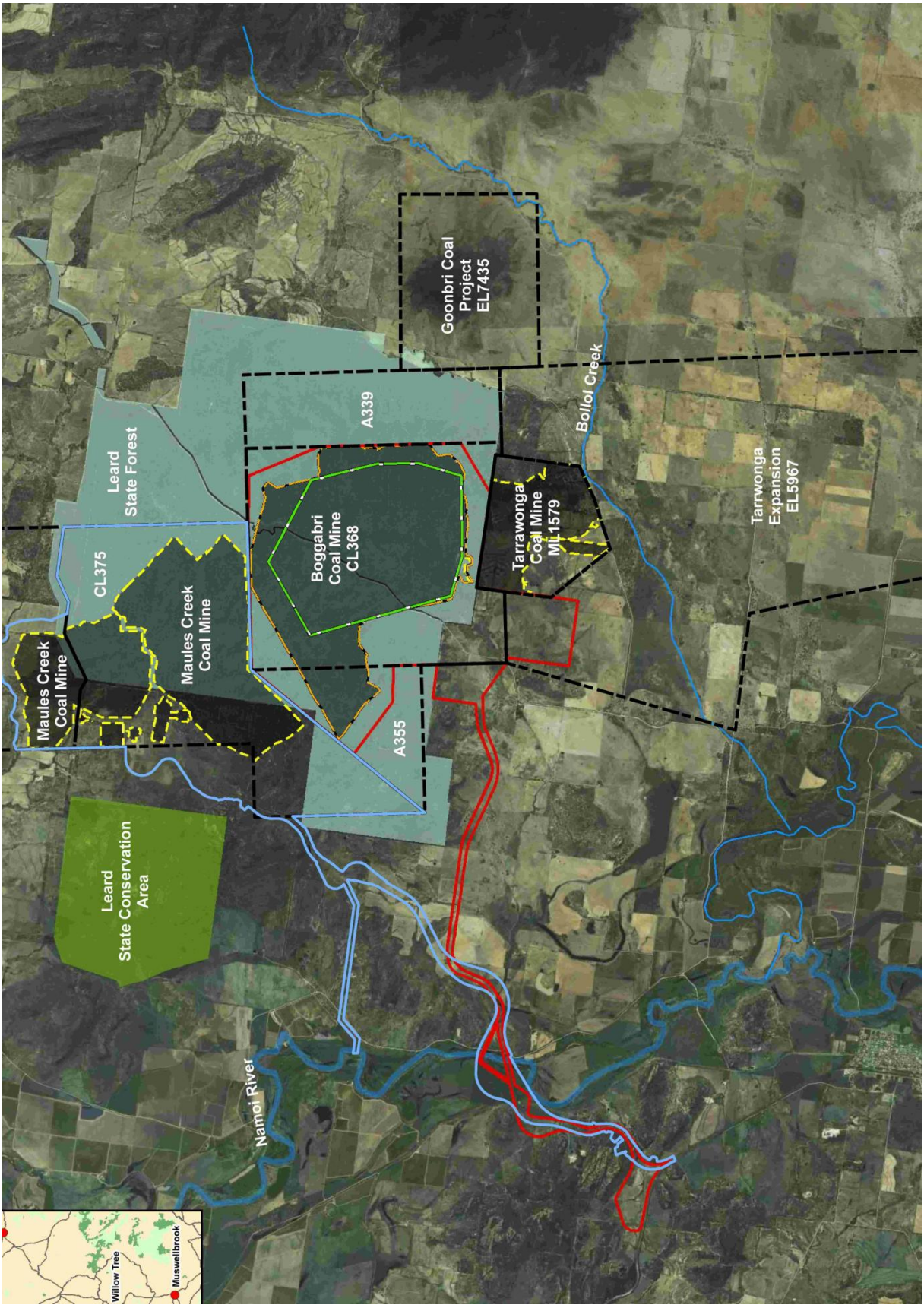

Fig 2. The current and proposed mines in and adjacent to Leard State Forest

6.0 Environmental and Social Impacts

6.1 Impacts on Leard State Forest

There is a level of uncertainty regarding the extent of clearing in Leard Forest, and how much of this is the critically endangered ecological community, and how much other habitat for mammals. Cumberland Ecology, in a report forming part of Aston Resources EIA, state that:

"based upon current proposals within Leard State Forest, the combined impact of mining would remove 3081.8 ha of forest and woodland, which is 60% of the extant forest and woodland. Such mining would also be likely to remove 1217.1 of 2153.1 ha of Box Gum Woodland and Derived Native Grassland, equating to 57% of the CEEC within Leard State Forest."

Clearly therefore, the overall footprint of the combined mining activities is in the vicinity of 4300 hectares plus edge effects. Edge effects can encompass both human induced and other biophysical effects, including microclimate variables across the ecotone. Wider corridors or larger gaps are shown to have a more significant impact than narrow corridors or smaller gaps due to depth of penetration of the various effects into the forest. The effects are more pronounced in closed canopy environments closer to the edge, ie. rainforest, however they still exist and extend further into an open forest environment than a closed forest environment (Goosem and Turton 2000).

Photosynthetically active radiation (PAR) reaching the forest floor has a significant relationship with distance from clearing, leading to possible emergence of alien species at the edge. Soil surface temperatures both on the surface and at 10cm depth are highest at the edge and extend inwards depending on the orientation of the corridor and season (declination of the sun). Air temperatures and vapour pressure deficits have more pronounced gradients for open canopy forests than closed canopy forests, which has implications for regeneration. Overall, linear clearing impacts on microclimate decrease with distance from the edge. Wide clearings or gaps without canopy retention allow greater invasion of weeds, and result in greater penetration of disturbance indicator species (Goosem and Turton 2000).

Owing to the irregular, however predominantly circular shape of the impact footprint, it is difficult to do more than estimate the extent of the edge effects. Based on an estimate of maximum edge effects of 100% at the edge, reducing to 0% at 200 metres from the edge, the likely total impact footprint would be in the vicinity of 4700 hectares.

6.2 Other Environmental and Social Impacts

Other environmental and social impacts relate to the physical presence of the mines and their flow on effects by way of noise and dust pollution; increased heavy traffic on the gravel side roads; possibilities of contaminated watercourses and interference with groundwater recharge; loss of community, etc. However, these impacts are beyond the scope of this report, and they have been amply explored by both the Mining Company's consultants, and the community's responses, both independently and through their consultants.

The remaining concern, and the most cogent issue facing the community, is the unknown effect the mining complex and cumulative impacts will have on their property values. Clearly, the sale of prime agricultural land adjacent to, or nearby an operating coal mine complex with a life of 21 yrs is difficult at best, and the obvious first indication would be slower than normal disposal rates, possibly resulting in the dropping of prices, or low offers. This effect is most concerning for those nearing retirement, and looking to either sell to move closer to the coast, or to put succession plans in place. Over the 21+ year life of the mines, this prospect will be very real for the large majority of the community.

7.0 Valuation Law and Practice

In Australia, all of the principles and practice of valuation have been derived from judgements handed down by the Supreme Court, the High Court and the Privy Council. Some relevant law and practice as it applies to this particular situation would be helpful in discussion, particularly when the possibility exists of loss of property values due to the presence of the mines and their associated negative externalities.

The definition of 'unimproved value' in the Commonwealth Act and used in connection with, and defined by the taxing laws of Australia and the States and New Zealand is:

"The capital sum which the fee simple of the land might be expected to realise if offered for sale on such reasonable terms as a bona fide' seller would require, assuming that, at the time the value is required to be ascertained for the purpose of this act, the improvements did not exist." (Lambert 1932:15).

This assumed that the increased value attaching to any particular piece of land which is due to the successful working of other people's land in the district, or the progressive works affected by the state, the general prosperity of the country, all form a portion of the 'unimproved value'. (Curtis 2003).

The courts insist that:

"The value of a particular piece of land is the value of civilised government at that spot, it is the value which the presence of the community gives to the land and which the community unconsciously assesses. It is something which is already in existence and must be discovered not invented.....it will be seen, therefore, that unimproved value is in reality the capital value of the economic rent of a piece of vacant land or other natural resource". (Herps (1942:107; Curtis 2003).

The above was supported by a judgement of the Privy Council in Fiji on July 1 1957, where it was ruled that land is to be valued as situated in the community with the amenities that have grown up around it (Tetzner vs The CSR Co Ltd). (Curtis 2003)

7.1 The Value of the Ecosystem Goods and Services generated by Leard Forest

Table 1. The now commonly accepted suite of ecosystem goods and services (Curtis 2003; 2004, adapted and modified after Costanza 1997 and Cork and Shelton 2000).

Group	Type
Stabilisation Services	Gas regulation (atmospheric composition) Climate regulation (temperature, rainfall) Disturbance regulation (ecosystem resilience) Water regulation (hydrological cycle) Erosion control and soil/sediment retention Biological control (populations, pest/disease control) Refugia (habitats for resident and transient populations)
Regeneration Services	Soil formation Nutrient cycling and storage (incl carbon sequestration) Assimilation of waste and attenuation, detoxification Purification (clean water, air) Pollination (movement of floral gametes) Biodiversity
Production of Goods	Water supply (catchment) Food production (that sustainable portion of GPP) Raw materials (that sustainable portion of GPP, timber, fibre etc.) Genetic resources (medicines, scientific and technological resources
Life Fulfilling Services	Recreation opportunities (nature-based tourism) Aesthetic, cultural and spiritual, (existence values) Other non-use values (bequest and quasi option values)

Every use of land has an opportunity cost, that being the existing use or other uses to which the land could be put (the use foregone) (Edwards 1987; McNeeley 1988; Frank 1991). The value of a conservation area should be at least as much as the cost of preserving it, or measured by the cost of the foregone opportunities, as the area cannot be developed or redeveloped (Allison *et al.,* 1996). McNeeley (1988:33) described marginal opportunity cost as a 'very useful tool in making decisions about allocation of resources'. Moreover, McNeeley (1988:33) argued that marginal opportunity cost: *"…can be used as a means by which those who will lose from having restrictions placed on their use of biological resources can be compensated to recover the value of their lost opportunity".*

Marginal opportunity cost can be expressed in terms of the annual net revenue foregone, in which case it would be capitalised, resulting in a land value in restricted and unrestricted use (McNeeley 1988). These concepts clearly link the natural production function of land with land valuation procedures. As ecosystem goods and services are the production function of land in its natural state (the *Usus Fructus per annum*), and as ecosystem goods and services are essential for planetary life support (Ke Chung and Weaver 1994), it could be argued that the provision of ecosystem goods and services are the 'highest and best use' of land. It follows that apart from the economic valuation procedures described in Coleman (1996), Tamlin (1996) and Reed (2003), the value of non-market environmental attributes can be derived indirectly by using prices from a related market which does exist (Allison *et al.,* 1996), namely, the property market. For the first time, now, the production

function of land set aside for conservation can be valued in much the same way as more traditional uses of land, such as agriculture or urban development. Clearly, for conservation to be a viable alternative land use it must be competitive with other uses to which land could be put, otherwise no one will pay for it.

Individuals in the community constantly reveal their preferences to purchase property for a multitude of uses. The pecuniary measures of these preferences are used as comparable sales by state agencies charged with the responsibility of valuing property and determining unimproved values as a basis for levying rates and taxes. The collective values thus underpin the costs of administration and provision of infrastructure in the bioregion (Lambert 1932; Herps 1942; Murray 1954; Blackwell 1994). Unimproved values are assessed on the principle of the highest and best legal use, yet assume that improvements do not and have never existed.

Valuer General for Ireland, member of the Royal Society and founder of Political Arithmetric, Sir William Petty (1623 – 1687) was first credited with capitalisation of the *Usus Fructus per annum* or productivity function of the land (Murray 1954, 1969; Roll 1961).

The Oxford Dictionary defines *Usufruct* as: *1.Law. "The right of temporary possession, use, or enjoyment of the advantages of property belonging to another, so far as may be had without causing damage or prejudice to this. Usufruct is the power of disposal of the use and fruits, saving the substance of the thing"* (Simpson and Weiner 1989).

Sir William Petty believed that capitalisation of all of the profit and benefits produced by land held in the public domain was a logical economic step to take to determine capital value, or vice versa (Murray 1954, 1969; Roll 1961). However, Petty was uncertain as to how to determine the rate of return from land other than using the surplus from production as rent, but came up with an ingenious solution. Petty determined that the rights to land of three generations of humans would be a reasonable estimate, and as three life expectancies in England in the 17th Century were 120 years, he computed the value of land at twenty one year's purchase of its annual rent, or in money-capital terms, a capitalisation rate of 4.76% (Roll 1961).

In this study, the surrogate market is the broader property market in the bioregion in which the mines are located. However, like all farm budgets, it is also necessary to determine 'what' and 'how much' is being produced in the context of ecosystem goods and services. Two models were chosen to properly reflect the type and status of the Leard State Forest, namely 'Open Forest' and 'State Forest'. The capitalisation rate is determined by a study of the market relevant to scarcity and risk and by using ecological models based upon the relationship between vegetation cover and species richness, land use characteristics and level of protection. The models are proprietary, however, they are based on the collective work of Holdridge (1967), Lugo

(1988), Brown and Lugo (1982), Mooney (1988) and McArthur and Wilson (1967). The LOP model uses Level Of Protection to set the capitalisation rate. As the level of protection decreases, the capitalisation rate increases reflecting risk (Figure 3). The LUC model uses Land Use Characteristics to set the capitalisation rate. As human and climate induced modification increases, so does the capitalisation rate in order to reflect scarcity of ecosystem goods and services (Figure 4). Both models are also used to determine 'how much' ecosystem goods and services are being produced, which are expressed as a range. The relationship between vegetation cover and species richness is generally 3:2, except for Mediterranean climate ecosystems, where it is generally 1:1 (Mooney 1988). As both alienated and un-alienated land provide ecosystem services it is important to be able to estimate the extent to which the land contributes to the overall contribution. Depending on the level of disturbance, other human activities on the land can co-exist with the provision of ecosystem services.

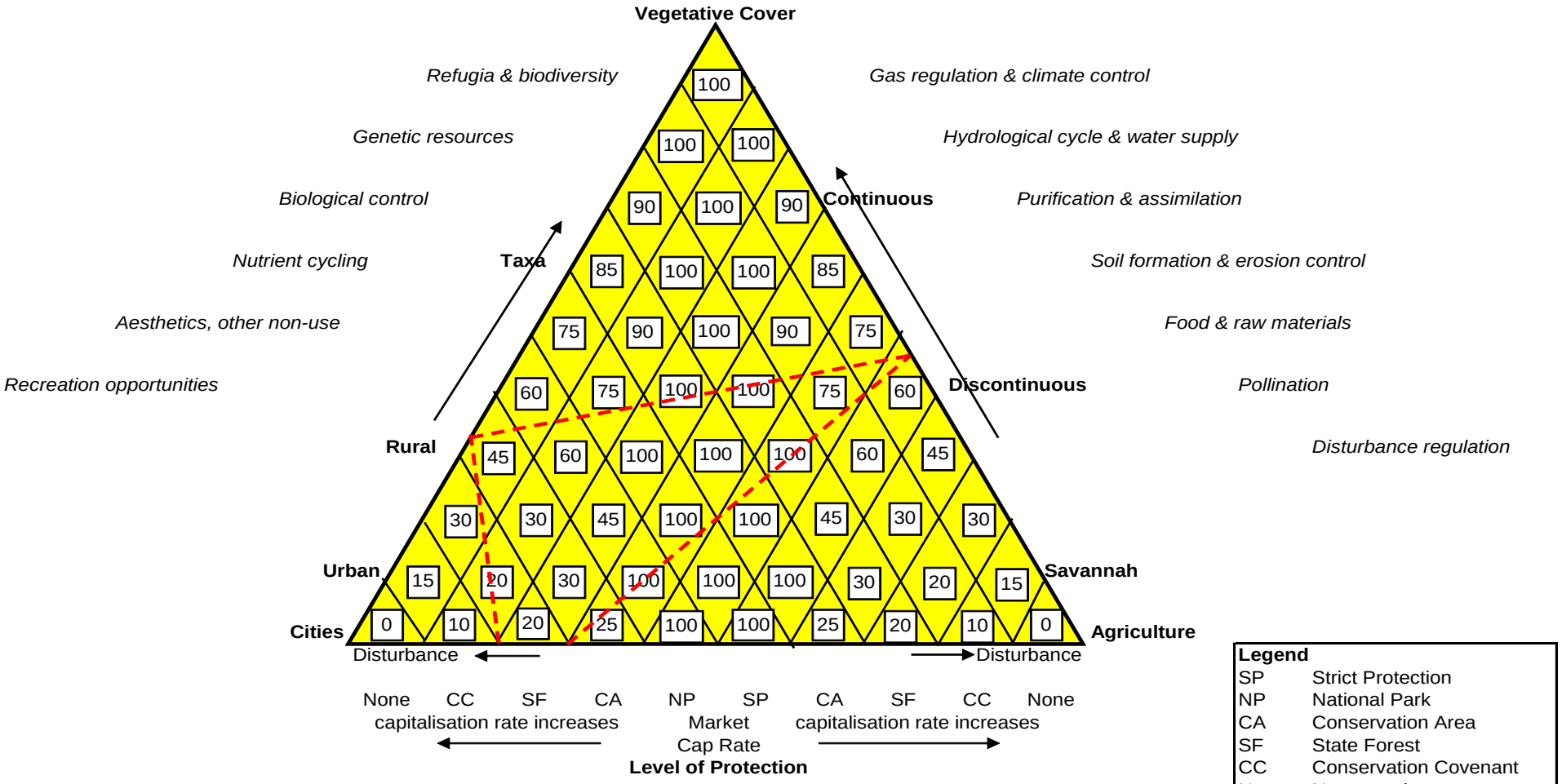

Figure D4. Triangulation model to assess extent of ecosystem services intact under a given level of protection or no protection
Scoring: Calculate the mean of the values within the diamonds included in the selection as well as those the dotted line passes through.
This example, State Forest: 66%

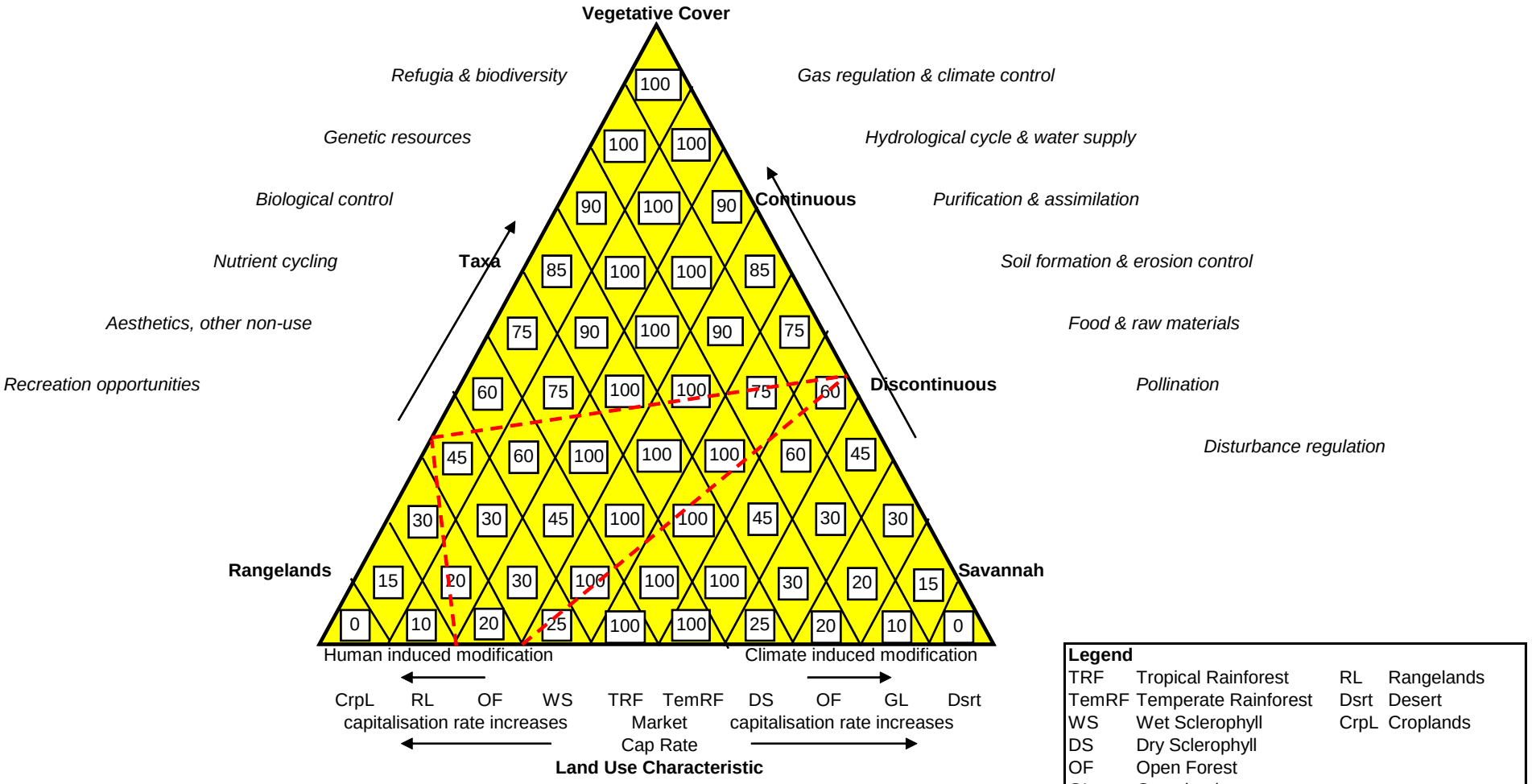

Figure D16. Triangulation model to assess extent of ecosystem services intact under a given land use characteristic
Scoring: Calculate the mean of the values within the diamonds included in the selection as well as those the dotted line passes through.
This example, Open Forest: 67%

The local government areas (LGAs) that are contained wholly within or that administer parts of the bioregion were ascertained from public records and maps. These local governments were consulted as to the total rateable value of alienated land within their jurisdiction, and the total area of that land. A dollar value per hectare was calculated for each LGA (total rateable value/total area). Statistical analysis can be performed on the resulting set of dollar values for the LGAs, and the range, mean, median, mode, standard deviation and skewness calculated. Owing to the variability in the data (range), due to varying degrees of urbanisation, development, use, distance from services, and average parcel size, the data set can be expected to have a high degree of positive skewness. The measure of central tendency most commonly accepted for this type of skewed data set is the 'median', however, in this study it is appropriate to express the values as a range, and those measures will include both the mean and the median. These measures will provide the fairest approximation of all of the uses to which land is put in the bioregion on a *broadacre* basis and will take into account all of the various principles and factors that affect the value of land.

The median and mean unimproved values per hectare of the alienated (rateable) land in the bioregion are then used as a surrogate for the median and mean unimproved value per hectare of the un-alienated (public or unrateable land). This is consistent with valuation practice (McNamara 1983). However adoption of the mean or median unimproved value as a surrogate value implies that the value is for the average or 'median' use in the region and not the single 'highest and best' use. It is thus a conservative estimate, allowing that other uses of land can co-exist with the provision of ecosystems services.

Table 2. The current real property valuation calculations for each shire in the Brigalow Belt Bioregion (as supplied to the relevant Shire Councils by the NSW Valuer General).

LGA	Total VG valuation (for rating purposes)	Gross Shire Area	$ value per hectare
Moree Plains SC	$2,487,348,445	17,928 square km	$1,387
Narrabri SC	$1,243,634,158	13,028 square km	$...955
Warrumbungles SC	$ 951,005,400	12,380 square km	$ 768
Gwydir SC	$1,298,654,520	9,122 square km	$1,424
Liverpool Plains SC	$1,435,730,378	5,086 square km	$2,823

The mean of this data set is $1,471 per ha, and the median is $1,387 per ha. Thus the range of the values to be used is $1,387 to $1,471 per ha.

Using the LOP and LUC models for 'open forest' and 'state forest', the level of contributions compared to the highest level, which is a closed canopy tropical rainforest, are 66% and 67%.

The impact area in Leard Forest, including edge effects, is 4700 ha.

Capitalisation rates for this 'land use characteristic' would normally be 7 – 8 %, while for this 'level of protection' they would be, say 9%, that is higher than for say, a Wet Tropics World Heritage Area rainforest, as the higher capitalisation rate reflects an elevated risk. In the case of this State Forest, clearly there has been no protection afforded by its EPBC listing, or the native vegetation clearing laws, and the very fact it is being cleared demonstrates that it is at risk. Under these circumstances, a capitalisation rate of 11% will be adopted for the purpose of this report.

Applying the capitalisation rate to the range of capital values, results in an annual range of $152.57 to $161.81 per hectare.

The algorithm then is:

Impact area X % contribution X $ annual value

The value of ecosystem goods and services for the impact area in Leard Forest is in the range of:

$476,858 to $505,737 per annum

8.0 The Communities Aspirations for an Impact Mitigation Mechanism ('s')

The community propose two funds to manage the negative impacts and achieve a level of self-managed internalisation of these externalities in their lives and businesses, they are as follows. These will most likely be modified as a result of this report, however, they are included here as an outline of their expectations.

Principles for Community Fund

1. The objective of the fund is to capture benefit to the impacted community and its members with an emphasis on quality of life to offset impacts on health, living standards, amenity and property prices.
2. The community fund be contributed to by all mines in the Leards Forest Coal Complex.
3. The contribution be paid on a per tonne basis.
4. The contribution be linked to the coal price
5. The fund be administrated by a trust with 5 trustees. 2 Mining, 1 NSC GM, 2 community.
6. Accounts to be administered by reputable accounting firm and independently audited.
7. Broad Objectives to be determined by the trustees after scoping submission process and projects to be tendered for on a competitive basis.

Principles for Leards Forest Environmental Trust (LFET)

1. The objective of the fund is to offset the cost of environmental impact to the Leard Forest.
2. The cost of forest impacts to be determined by consulting environmental economists. Fund calculated to pay for total forest impacts over 21 year. Impacts included in calculations are;
    a. Carbon Sequestration value of the forest.
    b. BioBanking (NSW) or Bush Broker (Vic) value of the Leard Forest Ecosystem.
    c. Value of the timber in the forest.
    d. Recreational Value
    e. Non-use value.

3. The LFET be contributed to by all mines in the Leards Forest Coal Complex
4. The contribution be paid on a per tonne basis.
5. The contribution be linked to the coal price
6. The fund be administrated by a trust with 7 trustees. 2 Mining, 1 NSC GM, 2 community, 2 environmental groups.
7. Broad Objectives to be determined by the trustees after scoping submission process and projects to be tendered for on a competitive basis.

Proposals

In both proposals, linking compensation to the revenue from the mining and sale of coal should be avoided. Some landholders would be offended that they were, somehow involved in an extractive industry, while others may see such an arrangement as a de facto partnership that may inappropriately reflect or impact on them in the future.

Leard Forest Environmental Trust

Call out 2 above to be replaced by the utilisation of the now assessed value of the ecosystem goods and services lost, which encompass:

- stabilisation services;
- regeneration services &
- life fulfilling services.

These would need to be replaced or supplemented by local environmental projects.

Call outs 4 & 5 deleted as obsolete.

The mines would be required to contribute collectively a sum equivalent to the value of the ecosystem goods and services lost due to clearing the forest, as assessed in Section 7.1 above.

The fund would thus have disposable annual income of some $490,000 for the life of the mines (21yrs+), increasing at the cost of inflation and a lump sum on closure estimated to be equivalent to 50 yrs discounted net annual value. The final lump sum will thus allow sufficient time for full return of the offset areas and derived grassland to the delivering of a full suite of ecosystem goods and services with sufficient biomass and diversity to be self-sustaining.

The fund would be administered as envisaged by the MCCC.

Maules Creek Community Fund

Call outs 4 & 5 deleted

The Community Fund needs to be funded by the Mines on the basis of the core concerns of the community, namely loss or reduction of property values, which, as stated in Sect 9, are and will be due to:

- general reduction in quality of life;
- loss of general amenity values;

- loss of, or reduction in property values, including forced sales due to delays in realisation, succession issues, and cumulative impacts apparent to prospective buyers.

As all of these issues generally relate to where the individual properties are located in juxtaposition to the mines, and as such can be all be located in, and around the Maules Creek Community, centred on the School and the Community Hall.

As cited in Section 7 above:

The courts insist that:

"The value of a particular piece of land is the value of civilised government at that spot, it is the value which the presence of the community gives to the land and which the community unconsciously assesses. It is something which is already in existence and must be discovered not invented.....

And, also from Section 7:

"This assumed that the increased value attaching to any particular piece of land which is due to the successful working of other people's land in the district, or the progressive works affected by the state, the general prosperity of the country, all form a portion of the 'unimproved value'".

Accordingly, the mechanics of the Community Fund should be geared to two mechanisms:

1. gross unimproved property values in the Maules Creek Community, The current Valuer General's assessment for each property could be used as a baseline for future analysis of sales, when there are sufficient sales for a longitudinal study, and;
2. certified valuations of all of the affected properties in Maules Creek. The valuations to all be conducted by a reputable firm of licensed valuers knowledgeable in rural property, and based upon both the underlying characteristics of the properties, and the productivity or potential productivity, at the date of valuation.

All of the mines would be required to contribute to the fund, which could be set at a minimum of 10% to a maximum of 25% of the gross improved values of all of the properties in Maules Creek Community. These percentages could represent the potential range of loss in value. This sum should be paid as a lump sum, with the interest accruing used to compensate individual property owners and families for health or social issues or loss of property value when realised (or when there is sufficient evidence for a longitudinal study). The capital sum after mine closure and

rehabilitation can be used for other works, including rebuilding the community and providing a sinking fund for those disadvantaged.

Call outs 4 & 5 deleted as obsolete.

10.0 Conclusion

The proposal set out above relies on data that is available in the public arena, and utilises an empirical database as the baseline for compensation for the loss of the forest, and both an empirical database and a certified valuation to argue the case for compensation for loss in property values, other community impacts and uncertainties. In the author's opinion, properly applied, this model will be hard to challenge, as it satisfies the economic criterion of the utilisation of human preferences to establish compensation (what people pay for land), ecological models based on the literature and utilising canopy cover and species richness as the parameters, and real estate valuation principles and practice, which are derived from judgements handed down in the Supreme Court, High Court, and the Privy Council.

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