

Ian Dundas
Committee Secretary
House of Representatives Standing Committee on
Environment, Recreation and the Arts
Parliament House
Canberra
ACT 2600

Dear Mr Dundas

**INQUIRY INTO REGULATORY ARRANGEMENTS FOR TRADING IN
GREENHOUSE GAS EMISSIONS**

I am pleased to convey the submission by Landcare Foundation Victoria to the Inquiry.

It has been prepared by the Foundation's Greenhouse Sub-Committee and clearly advocates a government role to establish a credible framework within which a market, including vegetation carbon offsets of greenhouse emissions, can be developed.

Landcare Foundation Victoria is confident that the emergence of a technically credible and reliable market in vegetation carbon as emission offsets will be of enormous benefit to rural Australia, providing new opportunities for viable timber production, retention of native vegetation and land rehabilitation works involving vegetation plantations to combat erosion, salinity, soil acidification, declining water quality and habitat problems.

Positive community response will ensure that rural Australia plays its part in reducing national (and global) emissions of greenhouse gases and will boost the achievement of other national objectives in sustainable land management, biodiversity and the expansion of private plantations.

We look forward to an opportunity to address the Committee if this is possible.

Yours sincerely

Wellington Lee OBE OAM RFD JP
Chairman

INQUIRY INTO

**REGULATORY ARRANGEMENTS FOR TRADING IN
GREENHOUSE GAS EMISSIONS**

Submission by Landcare Foundation Victoria: 27 March 1998
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PRELIMINARY

Landcare Foundation Victoria ("Landcare") in making this submission notes with approval the remarks of the Minister for the Environment of 11 December 1997 in relation to the Kyoto Protocol when he said-

"This is the first time that the international community has agreed on specific and substantive measures to combat climate change.

We have achieved a differentiated outcome which is more equitable for Australia than many would have thought possible, based on international acceptance of our specific national circumstances.

We argued for a comprehensive approach to the coverage of the agreement to include all sources, sinks and gases, and have successfully negotiated a result which meets these objectives under the current agreement or its successor. We are pleased that the protocol recognises what Australia is doing to reduce land clearing.

The Kyoto Protocol protects Australia's export competitiveness and employment prospects in Australia's substantial mineral processing and energy export industries. The agreement to establish a greenhouse gas emissions trading regime will be an essential component of this."

Landcare submits that the comprehensive approach referred to by the Minister can, as he has suggested, be achieved only with the prolific development of carbon sinks arising from the management and extended plantings of natural and cultivated vegetation to offset the continued emission of fossil carbon dioxide and other greenhouse gases emitted in the course of business.

Landcare believes it is in a unique position to advise upon and develop a practical framework on which appropriate Regulatory Arrangements can be proposed or

enacted. It recommends a framework based on voluntary commercial participation through the market place, with minimum government involvement in which trading in carbon credits encourages the retention, extension and use of woody vegetation in Australia. **Landcare's** approach has been to construct a workable system which is financed by the income it produces.

Landcare has over 10 years of practical on-ground experience in revegetation and re-forestation projects supported by groups such as Greening Australia and the voluntary participation in its activities of over one third of Australian rural landholders. In addition, its involvement in the 2020 Vision, Plantations for Australia, and initiatives in Farm Forestry under the Wood and Paper Industry Strategy, Natural Heritage Trust programs in Farm Forestry, Bushcare and Bush for Greenhouse programs renders it a significant focus in the revegetation of the Australian landscape.

Landcare notes with appreciation the work undertaken by the Greenhouse Challenge Office to prepare a Greenhouse Challenge Sinks Workbook, now in draft form. The approach taken by the Office is broadly supported. Issues of detail will be raised during the comments stage.

RESPONSE TO TERMS OF REFERENCE

1 Mechanisms for measuring, verifying and monitoring emissions and the compliance with contracted arrangements:

This submission focuses on the vegetation sink offsets. It recognises firstly, the need to specify classes of eligible vegetation and set protocols for calculating emissions and removals from eligible vegetation projects so that a credible 'carbon credit' can be determined for specified emission offset purposes.

The approach adopted by the GCO (Draft) Sinks Workbook 1997 is generally supported, with reservations as to:

- the **cost** of detailed monitoring and verification (which may make the system inaccessible to all but the 'big players')
- the shortcomings (to date) on recommendations on '**default' values and methodologies.**

The submission makes suggestions on some of these matters, envisaging an important role for a government authority to set in place a suite of 'conservative' values and calculation protocols (and an agreed review system) so that it becomes reasonable to consider plantations down to (say) 5 ha in size. [Such plantations may sequester an average of 500 tC over a 20-25 year rotation]

The submission stresses the importance of contracted arrangements, in particular the **ownership of assessable carbon** (sequestered post 1.7.90), in relation to the ownership of the vegetation containing it. Standard definitions and guidelines (or even regulatory arrangements) will be helpful to set the ground-rules for parties other than the owner in claiming the 'right' to count, use as an emission offset or trade 'carbon credits'. Exclusivity must be assured so that double counting is avoided.

Regulation or legislation is needed to ensure that a claimant who over-claims or trader who 'short sells' carbon credits (or emission rights) makes good the shortfall, and that substantial penalties apply in the event of failure to comply. Recourse to a market is an obvious way of meeting contractual obligations within a short time horizon and should be acknowledged as one of the benefits of an orderly, 'standards-supported' market.

2 Mechanisms to integrate emissions trading with the development of carbon sinks (such as timber plantations...) including the science, measurement and security of such arrangements

This is the main thrust of the Landcare submission. The point is made that the vegetation sector can play an important role in meeting national reduction targets. This is enhanced by integrating emissions trading with vegetation sinks (and is a low cost option given the many other interests in growing vegetation). It requires that 'carbon credits' arising from the growth and storage of carbon in vegetation be determined as an accurate offset to greenhouse gas emissions.

Offset unit

Global warming offsets are a function of two factors: quantity and time. This submission advocates that a 'carbon credit' unit be defined that is scientifically equal and opposite in effect to a known global warming unit of CO₂, and be readily translated into a form understood by plantation growers (such as 'tonnes carbon per year', 'tonne carbon years' or '100 year tonnes carbon'). We recommend tonne carbon years.

Equivalence between wood and carbon dioxide

In defining the unit it is essential that the issue of **equivalence** between carbon in plant tissues and CO₂ in the atmosphere be clarified. This establishes the relationship between removals (carbon credits) and CO₂ emissions. While conventional wisdom assumes a 1:1 equivalence this is by no means clear. This submission suggests it may be as low as 1:2 (1 tonne carbon *stored* in plants over 100 years will offset 2 tonnes carbon as CO₂ based on the IPCC's definition of 'global warming potential'). The Inquiry should ensure this matter is thoroughly investigated. There is a role for an 'Authority' *to set an equivalence figure*, which in the first instance might be set at 1:1 *pending the results of the investigations*.

Storage and replacement of 'steady state' biomass

Accounting for carbon credits should focus on annual or periodic movement into and out of a sink, as well as reporting the opening and closing balance in the sink. Most of the calculations of carbon in biomass and reported in NGGIC publications and other workbooks focus on **quantity and growth** issues rather than **time**. For this reason the submission recommends tonne carbon years as the unit for carbon credit measurement and trade. Existing forests, apparently in 'steady state' also contribute positively to reducing the greenhouse effect because the global warming unit is a time-defined 'dose'. This submission has proposed an approach to determining the contribution of a standing forest to global warming unit offsets. It will require an

authority to set a conventional methodology, and to do so in collaboration with international bodies (IPCC and other nations).

[The importance of this should not be under-estimated. Land clearing contributes over 20% to national greenhouse emissions annually. Ascribing an economic value to its retention (and positive management) by virtue of its carbon storage will reduce the net rate of clearing (Forest and Grassland Conversion) and may be one of the biggest factors enabling national targets to be met or even exceeded.

3 The allocation of the right to emit greenhouse gases

While not central to our submission, a number of specific suggestions have been made in support of:

- a regulatory framework for emission control
- an annual emissions return (for persons specified within the framework)
- emissions licensing
- licence fees
- trading in licences

Landcare proposes that carbon credits (contained in eligible vegetation sinks) should be claimable within annual emission returns and in the satisfaction of licensed emissions.

A substantial role for a government authority is envisaged to establish and administer this process.

4 Regulatory mechanisms to support a national market in emissions trading

Landcare's submission envisages a substantial role for a government authority to establish a credible and orderly market in (emission rights and) emission offsets from vegetation carbon sinks. This work will be beneficial to all other aspects of recording and reporting of greenhouse emissions and targets.

It is recognised that Australian carbon credits sold to an international purchaser may also be counted in the jurisdiction of the purchaser towards tax or regulatory targets, and aggregated into other national performance figures as well as in Australia. To avoid double counting, trades will need to be registered, or a seller will be required to furnish a *carbon emissions return* showing the sale as an 'emission'. Also, support processes will be needed to feed the results of sale registrations or emission returns through into national statistics for NGGIC's reporting purposes.

One of the most important areas for government support is the accreditation of service providers to operate within a framework of practice that (it is submitted) should be set in (progressively amended) guidelines and regulations issued by an authority.

If this is not the case service providers will seek to draw eclectically and opportunistically from their subjective perceptions of 'best practice' weighed up against their subjective readings of what the market will accept and any premiums

paid for higher quality that might warrant additional efforts in measuring and verification. In short it will be a messy, disorderly and unstandardised market. Service providers will be motivated by subjective 'risk-reward' perceptions and pass on the risks to traders who, in turn, cannot be expected to understand the complexities of credits and offsets. This is in nobody's interest.

Sellers and purchasers will demand some 'comfort' from the knowledge that there is a set of national 'rules' against which their transactions can be assured, even if those rules change fairly rapidly over the first few years as scientific, technical and practical considerations are drawn together, nationally and internationally.

5 Possible emission traders, administration and transaction costs

From a carbon credits perspective, Landcare's submission envisages trading being primarily driven by emitters seeking to reduce or offset emissions (whether for reasons of voluntary implementation plans, regulatory licenses or taxes) by the purchase of carbon credits from (vegetation) sink providers.

It is expected that most growers of vegetation will seek to use 'accredited' service providers (eg from local government, real estate agents, rural, forestry and environmental consultants) to monitor, measure and verify their carbon credits.

6 Roles and responsibilities of governments and other stakeholders

Commonwealth Government:

- Recognise that international arrangements need to be agreed on frameworks, procedures, calculation protocols and default values set up in Australia (or elsewhere) that will feed into an international market.
- Take the lead in setting these arrangements in place in Australia drawing upon and advancing world's best practice, including a commitment to review every 2 or 3 years or as agreements are reached.
- Consult or draw together the existing government greenhouse programs that relate to vegetation carbon sinks, so that agreement is made on criteria for acceptability of carbon credits (monitoring, measurement and verification) as offsets, national statistics or trading purposes. This includes GCO, EA, DFAT and DPIE. Use the agreements from this process to establish the first framework, guidelines and (schedule to) regulations.
- Establish an 'Office' to do this by appointing one of the existing agencies or set up a new authority.

State governments

- Contribute state information and expertise to development of the arrangements
- Integrate within existing services. [Example: accreditation of service providers may be coordinated through the states.]
- Other roles to be defined

Local governments

- Substantial scope for taking projects and programs close to local communities.
- Integrate with Cities for Climate Protection program

- Examine possibility of a municipally-based services: for example, to aggregate and monitor carbon credits from eligible vegetation. (This focus will reduce the variance of results and will make Local Government a genuine partner in support of vegetation retention, environmental revegetation and commercial plantation development.)
- Other roles to be defined

Other stakeholders

- There will be an emerging need for service providers to organise themselves into a professional association of carbon accountants, bankers, verifiers and traders. Such an association might be encouraged to take on the role of professional development and accreditation over the medium term, but cannot be expected to do so in the first few years of the emerging market.
- Education and training institutions will have an important role to play in offering courses in carbon accounting and related services. Course accreditation for tertiary qualifications might be linked with national or state accreditation of service providers.

7 The impact of emission trading on the environment and industry and the economic and social welfare of the Australian community

Landcare submits that emissions trading of ‘carbon credits’ between vegetation sink providers and emitters will have a major beneficial effect on the environment, industry and the economic and social welfare of the Australian community.

Greenhouse benefits

A reliable and credible market will boost participation rates, achieving efficient, low cost solutions and ensure that Australia is in a position to report on its achievements in the Land Use Change and Forestry Sector with much greater accuracy than has been the case to date. The development and widespread application of vegetation carbon accounting at a project level will effectively provide the ‘ground truthing’ needed for national-scale remote sensing models such as being applied by the Bureau of Resource Sciences.

Examples will be submitted on the potential greenhouse benefits of particular programs: NHT Bushcare and the 2020 Vision Plantations Australia Strategy.

Natural resource management and sustainability benefits

The ascribing of a value to carbon uptake and storage in vegetation by virtue of a market for surplus ‘carbon credits’ will add substantial value to commercial plantations and environmental plantings in a way that is supportive of the longer term sustainability of resource management.

For example, commercial plantation growers taking carbon value into account, will switch (at the margin) towards longer rotations and more durable products.

Environmental planters, seeking to address salinity, erosion, water quality or biodiversity and habitat improvements by revegetation activities will have the incentive to do more of this good work. For the first time there will be a **direct**

economic benefit resulting from these plantings, that by its nature is very compatible with the local reason for doing it!

Industry

Industry and commercial businesses will benefit to the extent that they join into voluntary programs (such as the Greenhouse Challenge) or are obliged, one way or another, to meet constraining emission targets. Most corporate objectives are expressed in terms of 'continuous' progress toward a target, yet in practice the retrofitting of a firm's production processes to achieve greenhouse reductions will be lumpy and discrete events. The advent of a carbon 'credits' market enables firms to demonstrate continuing progress towards reduced emission targets, smoothing out the reality bumps!

It also enables 'short positions' to be quickly filled in satisfaction of a requirement to this effect in regulations, thus avoiding statutory penalties.

Economic and social welfare

Plantation growers, bushland retainers and other vegetation sink providers will gain financially from an ability to sell net surpluses of carbon credits. Forest products will be produced at lower cost because the marketable carbon credit component can be sold early in the growth of the forest, thus reducing accumulated interest in forest accounting for cost of growing wood. Rural communities will realise that they have another 'crop' on their hands, but it is one where the 'investment outlay' is in accounting, monitoring and verification processes rather than in traditional tillage and silvicultural works. The broader community gains through the investment vehicles that provide funds towards these enterprises. Improved returns encourages increased interest and willingness to invest.

Landcare groups will benefit by being able to partly fund some of their priority works to improve land management and productivity. This increases self-reliance, pride and cooperation at community level and underpins the social robustness of these communities.

Government supported market infrastructure

If the government takes a positive role in support of developing a sound and reliable market in carbon credits (which will include, but not be dominated by regulations) the realisation of substantial environmental, economic and social returns will be **multiplied**.

For example: Accreditation of carbon credit service providers is an area we propose for government support. Accreditation takes the service close to the people. It is a devolution of responsibility that will aid the extension of information, development of markets, and participation rates of sink providers. Given the case (we make) that vegetation is a low-cost sink option because of the substantial prospect of cost-sharing partnerships, accredited services will also boost participation rates of emitters under voluntary emission reduction plans such as those offered by GCO or those seeking to purchase credits on the open market. In the absence of accreditation or related standards, market development will be slow, clouded with uncertainty and many mistakes will be made in grappling towards a self-regulated market system or a more drastic form of government intervention.

THE RECOMMENDED SCHEME

Revegetation, it is contended (apart from Bushcare) is always likely to have a commercial focus. Hence it is likely to attract the strong support of both industry and investors. The framework here proposed, offers all Australians the chance to participate in a voluntary greenhouse reduction program by investing in focused, and substantiated revegetation plantings some of which will be for commercial return from wood and other products.

The scheme would require the recognition and involvement of key participants initially identified as carbon sink providers, participating landholders, authorized brokers, assessment and verification providers, and purchasers or previously sequestered carbon (who may also be emitters of fossil or sequestered carbon). The scheme is proposed within a framework agreed by the Australian Government and proposed by it for international recognition.

As well as providing a significant contribution to meeting Australia's obligation under agreed international greenhouse objectives, the scheme would complement Commonwealth, State and Industry initiatives in the 2020 Vision, Plantations for Australia, and in Farm Forestry programs. It would provide a commercial incentive to retain and enhance indigenous vegetation on privately managed property, be it under leasehold, freehold or native title, as well as on Crown land or land administered by government or semi-government agencies.

PROPOSAL: CARBON CREDITS

1 Basis for Proposal

Landcare starts the reasoning for its submission from the sum of the following-

- 1.1 The quantity of greenhouse gases in the atmosphere can be stabilized and eventually reduced by:-
 - 1.1.1 stabilising and eventually reducing the emission of those gases; and
 - 1.1.2 increasing quantitatively, the capacity of vegetation to convert gaseous carbon into a solid state.
- 1.2 The ability to stabilise and eventually to reduce emissions is dependent upon a worldwide:-
 - 1.2.1 perception of the need for this to occur; and
 - 1.2.2 acceptance of responsibility for the cost which must be paid in order to enable this to occur.
- 1.3 Such worldwide perception and acceptance requires-
 - 1.3.1 the education of people everywhere particularly as to the issue of cost;

- 1.3.2 a series of agreements between nations and particularly between industrialised and non-industrialised nations on a variety of issues; and
- 1.3.3 monetary incentives.
- 1.4 The conclusions must therefore be that:-
 - 1.4.1 the stabilising and eventual reduction of emissions is only part of a total solution; and
 - 1.4.2 a satisfactory resolution of that part is unlikely in the immediately foreseeable future.
- 1.5 Our ability to quantitatively increase the capacity of vegetation to sequester gaseous carbon is, on the other hand:-
 - 1.5.1 also an integral part of the solution; and
 - 1.5.2 in **Landcare's** submission, immediately attainable.
- 1.6 **Landcare's** submission is therefore primarily directed towards the strategies that need to be adopted to maximise the growing of appropriate vegetation in Australia as carbon sinks so as to maximise the sequestration of gaseous carbon.

2 Carbon Credits

Landcare advocates a system by which benefits (carbon credits) are awarded to appropriate vegetation where carbon removals from the atmosphere exceed emissions.

- 2.1 In calculating carbon credits **Landcare** has attempted to create a proposed system which is legally feasible and based on the following reasoning:-
 - 2.1.1 Carbon is an element which is not normally isolated but which occurs as part of a substance in either solid, gaseous or liquid form.
 - 2.1.2 It occurs in vegetation and we are capable of measuring it in that form.
 - 2.1.3 It follows legally, that whoever owns that vegetation owns the carbon in it but only for so long as the owner retains ownership of the vegetation either as vegetation or as the product of vegetation. If, for example, vegetation or its product is destroyed by fire, ownership of the released carbon will not continue because of the former ownership of the vegetation or the product. Nor will the law permit the former owner to claim ownership of other vegetation which has sequestered the released carbon (although the Regulatory Arrangements resulting from this Inquiry may require that it be counted as an emission).

- 2.1.4 The law will not permit the owner to retain ownership of carbon after he disposes of the ownership of the vegetation in which the carbon is sequestered. Nor, in **Landcare's** view, should that owner be liable for any diminution of the carbon in that vegetation because of the use to which the vegetation (or its product) is put after the owner disposes of it.
- 2.1.5 The owner of vegetation can sell that vegetation (and the carbon in it). He can also lease or licence the use of the vegetation without selling it and either with or without the right to harvest the vegetation. It follows that in leasing or licensing the use of vegetation (unless a contrary intention is stated) he will be leasing or licensing the carbon (and all other elements) contained in that vegetation but without a right to 'harvest' the carbon unless this is expressly agreed..
- 2.1.6 However, if a benefit (such as a carbon credit) accrues to the use which does not involve the 'harvesting' of the carbon then, subject to the expression of a contrary intention, the lessee or the licensee of that vegetation may enjoy that benefit during the continuation of the term of the lease or the licence.
- 2.1.7 So what is clear is that-
 - 2.1.7.1 carbon or any 'benefit' which accrues to a substance comprising carbon is capable of being owned and traded; but
 - 2.1.7.2 only as part of the ownership, trading and use of that substance.

2.2 **Landcare** contends that a benefit (carbon credit) should accrue to eligible vegetation (see definition) and that in respect of that benefit it should:-

- 2.2.1 exclude annual and biennial vegetation which should be regarded as background only;;
- 2.2.2 be assessed by calculating from 1990, the **increase** in the biomass of eligible vegetation;
- 2.2.3 be diminished by an appropriate deduction for the destruction of previous eligible vegetation in the planting of current eligible vegetation;
- 2.2.4 [**Landcare** notes the procedures for quantifying net carbon sinks arising through IPCC, NGGIC and the current Greenhouse Challenge Sinks Workbook to calculate net emissions but queries the cost effectiveness of these approaches. It suggests this Inquiry consider the setting of default emissions in lieu of measurements or otherwise agree the calculation of carbon credits but not deducting the emissions which are created in the planting, growing and harvesting of eligible vegetation;]
- 2.2.5 not attempt to diminish carbon credits on a project basis except as provided in para 2.2.3 and 2.2.4;

- 2.2.6 takes no account (in respect of the owner's claim for carbon credits) of changes to the carbon in the substance after the owner disposes of that substance. In other words if the owner of eligible vegetation claims credits for that eligible vegetation, the claim should not be diminished because the owner intends to fell the eligible vegetation and dispose of it as firewood. However, once the owner fells the eligible vegetation, carbon credits for it should cease and be counted as emissions unless it is allowed to coppice in which case carbon credits may again flow. The **person** who acquires the firewood, however, may be liable to include the emissions resulting from its burning (see parags 5 and 6);
- 2.2.7 cease in the case of eligible vegetation harvested, destroyed by fire, stolen dying or in any other way ceasing to be living vegetation. It should then be counted as an emission.
- 2.2.8 be calculated by approved estimation protocols, measurements or at default rates similar to depreciation rates under the *Income Tax Assessment Act* capable of being 'corrected' to actual sequestration at a later stage when actual sequestrations can be determined and verified either by felling and disposal of resultant timber (by weight or size) or, if felling is not to occur, by audit. Default rates will, it is believed, take cognisance of many factors including (in the case of eligible vegetation):-
- 2.2.8.1 the age of the eligible vegetation;
 - 2.2.8.2 the species of the eligible vegetation; and
 - 2.2.8.3 the land use which the planting of that eligible vegetation replaced.

2.3 Measurement of carbon in eligible vegetation for the purposes of assessing carbon credits should, in **Landcare's** view-

- 2.3.1 be measurements only of the net carbon sequestered or, (in default rates) assumed to be sequestered, by eligible vegetation:-
- 2.3.1.1 during that year in which case it can be claimed as a credit on a yearly basis for each year the eligible vegetation continues to exist as eligible vegetation; or
 - 2.3.1.2 a specified percentage, but not the whole, of the total of such gross carbon which, it is calculated by approved estimation protocols, will be sequestered in that eligible vegetation within its current rotation will be claimable at the time of acquisition as a once and only claim (refer attachment);
- 2.3.2 claims for carbon credits resulting from the retention of existing eligible vegetation and the thickening of existing vegetation should be entertained upon receipt of adequate proof. A suggested approach to this is set out in attachment);

- 2.3.3 the Crown in right of a State should be treated in the same way as any other owner of carbon credits and those carbon credits should be reduced in the case of the felling or other destruction or alienation of State Forests whether old or new growth; and
- 2.3.4 the growth of vegetation existing before 1990 should not be accepted as eligible vegetation but post 1990 increment should be acceptable upon receipt of proof (refer attachment).

3 Carbon Credit Ownership

- 3.1 **Landcare** has given lengthy consideration as to whether carbon credits should be capable of being claimed by **persons** other than the 'owner' of the eligible vegetation in which they are contained. 'Ownership' is a legal fact and allows for little, if any, argument. Claims based on "control" "use" or anything less than ownership are impossible to define and could lead to confusion. In the case of multiple ownership, there should be provision for election by owners as to which one or more of their number should have the benefit of the carbon credits. Apart from these considerations and the widening of the 'ownership' concept set out below, **Landcare** believe that ownership should be a necessary pre-requisite in order to maintain the integrity of the system, particularly if international trading in carbon credits is envisaged.
- 3.2 "Ownership" of eligible vegetation should be established by-
 - 3.2.1 ownership of the land on which the eligible vegetation is growing or long term lease of it (which grants ownership of the eligible vegetation) unless ownership of the eligible vegetation has been separately disposed of; or
 - 3.2.2 forest property agreement (Victoria).
- 3.3 Alternatively, in respect of eligible vegetation growing on public land or otherwise owned by a government authority, agency or appropriately authorised entity ("licensor") the licensor may in respect of eligible vegetation which is not intended to be sold, license the right to claim any benefit by exclusive licence. The intention is that authorised entities such as Landcare, Catchment Management Authorities, Committees of Management and Local Governments etc may be authorised to deal in carbon credits as a means of self-funding their activities, thus-
 - 3.3.1 a licensor may plant up public land for which it is responsible and licence the use of the resulting carbon credits for an appropriate consideration. The licensor would undertake to retain the eligible vegetation for an agreed term. Ownership of the eligible vegetation would not pass to the licensee.

3.3.2 alternatively a licensor may, by agreement, assist in the regeneration of privately owned land. In so doing the licensor would retain ownership of the eligible vegetation it planted on the private land by forest property agreement either in perpetuity, for the lifetime of the eligible vegetation or for a fixed term. In doing so, it would reserve the right to licence the use of the resulting carbon credits to a licensee for an agreed consideration on the same basis as in 3.3.1..

4 **Carbon Credit Dealing**

Carbon credits should be tradeable without restriction. They are, after all, in this model either tied irrevocably to eligible vegetation, licensed by a licensor or the subject of an election by multiple owners. In these circumstances, their trading will not endanger the probity of the system which would otherwise be a matter of concern.

REGULATORY FRAMEWORK FOR EMISSION CONTROL

Landcare advocate a voluntary system. However Regulatory Arrangements be drawn up without necessarily being implemented. They should, however, provide the basis upon which the voluntray system will operate as set out below.

5 **Proposal**

- 5.1 **Landcare** starts with the simple proposition that every **person** is responsible for the GHG emissions that **person** creates and/or permits to occur on that **person's** property (assuming that **person** has appropriate control of that property). This is nothing more than saying that a **person** is responsible for the litter he leaves behind him or the damage he does by his actions.
- 5.2 While emissions occur from a wide variety of sources, it is suggested that, for the purposes of any proposed Regulatory Arrangements, emissions should be taken to mean only those emissions occurring as the result of the combustion of fuel of every description. This limitation provides an excellent accounting basis (as set out below) and the restricted definition still covers most, if not all, emissions which are capable of being controlled.
- 5.3 In order to fix responsibility for an emission upon a **person**, it is suggested that the proposed Regulatory Arrangements containing a section or sections similar to the following:-

“A person is responsible for emissions which emanate from real or personal property used in a business from which that person derives or is entitled to derive income, other than income being dividends or a share of partnership income. If more than one person is responsible for property each of those persons is responsible for that property to

the extent of his, her or its interest in the business in respect of which that property is used.”

5.4 The above seeks to exclude emissions from the **person’s** home and from any other non income earning property although there is no reason why emissions from non-business properties cannot be included at a later date. The present intention is that a **person** should be responsible for all emissions of whatever kind which emanate in the course of business anywhere in Australia from that **person’s** property and from any part of that property.

5.5 The proposal links the assessment of the quantity of a **person’s** emissions with the quantity of that **person’s** acquisitions of fuel over an identical period. Those acquisitions can be calculated by reference to that **person’s** Income Tax Return where purchases of firewood, electricity, petroleum, gas, and other fuel will be separately recorded (albeit under a number of different headings) and are most unlikely to be understated.

5.6 If the level of GHG in the earth’s atmosphere reaches a point of concern it is appropriate that steps should be taken to ration or control the input of further emissions. It is also appropriate that the level which caused that concern should be reduced by further rationing or control. It is appropriate in commencing a system of rationing or control that we begin with the **persons** identified in sub-para 5.3 even if the system is extended later.

5.7 In order to impose a system of rationing or control, this model proposes that Regulatory Arrangements be enacted containing a section or sections similar to the following:-

“A person who is responsible for emissions which in any year exceed the permitted quantity must lodge a return of those emissions for that year with the Responsible Authority.”

5.8 The onus is on the emitter to accurately measure, record, monitor and return that person’s emissions. He must, it is suggested, keep all appropriate emission records for (say) 7 years. It is suggested that emission returns be lodged with or as part of the lodgment of annual Income Tax Returns. Measurement may be by:-

5.8.1 an approved measuring device (if one exists),

5.8.2 the product of distance travelled by a motor vehicle and the emission rate for that vehicle set by the Authority,

5.8.3 the product of operational time run by a machine and the emission rate for that machine set by the Authority,

5.8.4 any other approved method.

but with the proviso that where the **person’s** Income Tax Return disclosed fuel purchases which did not equal the in total

emissions calculated in accordance with default emission rates, the emissions calculated on the basis of fuel acquisitions may be accepted in lieu of default emissions.

- 5.9 It is anticipated that an Authority will set default emission rates along the following lines-
- 5.9.1 a rate per litre of petroleum consumed in an internal combustion engine of a uniform capacity;
 - 5.9.2 a rate per quantity of other fuel consumed in any other engine of a uniform capacity;
 - 5.9.3 a rate per cubic or square meter for all air conditioned buildings above a fixed minimum size; and
 - 5.9.4 a rate for furnaces based on capacity.
- 5.10 An Authority would, it is assumed, progressively extend its list of default emission rates as it was able to identify them and accurately assess their default rates for the production of emissions. These would be established by experts engaged by the Authority and be the subject of international comparison and regular review. Where an emission reduction device (including all methods for attaining the reduction of emissions) became available it would be the subject of an application for a ruling by the Authority which would assess its capabilities. If the Authority accepted its ability to reduce emissions, the Authority would strike a new default rate or default rates in respect of emission sources to which the device was applied.
- 5.11 It is further intended that the permitted quantity of emissions which is fixed from time to time, at which returns are required to be lodged, will be substantially lower than the level at which rationing or control will take effect. This will provide the Authority with data in respect of a sizable body of emissions each of a lesser quantity than those then covered by the control system. This data should enable the Authority to plan future developments with a fair degree of certainty.

6 **Licensing**

- 6.1 What is legally and politically feasible is an emissions licensing system the essence of which is-
- 6.1.1 an emitter is licensed in respect of all his, her or its licensed net emissions in Australia, ie the right to emit a given total of net emissions (anywhere in Australia) during the forthcoming year. It is anticipated that the total of licensed net emissions will be progressively reduced but that the emitter will be given reasonable forewarning;
 - 6.1.2 the threshold of permitted net emissions will also be progressively reduced;
 - 6.1.3 initially only very large emitters will require to be licensed;

- 6.1.4 upon lodging a first return, an emitter, if falling within the higher level of emitters required to be licensed, will be licensed to emit either the quantity disclosed in that return or a lower level. A **person** required to be licensed for the first time who has not previously been required to lodge an emission return will be assessed in accordance with industry standards and best international practice in order to determine the level of his licensed net emissions. The permitted quantity is variable and can be set yearly with the intention that-
 - 6.1.4.1 by reduction over time further emitters will be gathered into the system;
 - 6.1.4.2 emitters outside the system will reduce emissions to avoid inclusion; and
 - 6.1.4.3 emitters within the system will reduce emissions to avoid higher licensing fees;
- 6.1.5 if property is owned by a company, a partnership or a trust the emitter is the company, the partnership or the trust as the case may be. In other words, the provisions mirror the *Income Tax Assessment Act*; and
- 6.1.6 the licensing regime should impose progressively higher licensing fees as the quantity of licensed net emissions increases. Penalties for exceeding licensed quantities or for any other offenses (similar to offenses under the *Income Tax Assessment Act*) should be extremely high and coupled with the possibility of loss or reduction of licence.

(It is noted that a licensing system could be replaced by a taxing system including a taxing system designed to be negative revenue based on a reduction of net emissions to a level below the threshold. Alternatively a combined licensing and taxing system could be imposed. Alternatively the system could, as submitted, be on a voluntary basis involving industry associations in the imposition of the system and compliance being a pre-requisite of continued membership. It is, however, suggested that whichever system is adopted, the requirement to lodge emission returns be enacted. It is also suggested that if a voluntary system is adopted it be on the basis that one of the other systems is enacted but not implemented.)

7 **Trading in Licenses**

- 7.1 Some licensed emitters will be capable of reducing their net emissions more rapidly than the Authority reduces the total of their net licensed emissions. This would leave them in a position to be able to sell off surplus licence entitlements or even to lease or licence those rights. **Landcare** accepts that the trading of emission rights should be unrestricted subject to the following-
 - 7.2 if a licensed emitter disposes of part of his emission rights and subsequently exceeds his emission entitlement there should be a

statutory obligation to make good the shortfall in default of which a severe penalty should be imposed.

- 7.3 a licensed emitter trading off part of his emission entitlement runs the risk of the Authority reducing permitted emissions to a point lower than that permitted by the balance of his licence; and
- 7.4 the purchase price is subject to Income Tax including tax on capital gains.

8 Assessment

- 8.1 It is contemplated that licence fees will be paid upon net emissions. An emitter will therefore be entitled to offset against that emitter's total gross emissions for the year, the carbon credits which the emitter owns and is entitled to offset on the last day of that year (ie 30 June). It is not contemplated that carbon credits will be granted otherwise than for certified eligible vegetation. It follows that if an emitter reduces his emissions, this will reduce his liability under a licensing system or enable him to comply with licence conditions. It is not felt that he should be additionally 'rewarded' with carbon credits.
- 8.2 **Landcare** sees no reason why an emitter should not be entitled, upon written election to the Authority, to claim carbon credits in respect of certified eligible vegetation owned by the emitter upon the last day of the year-
- 8.2.1 in the year of acquisition, all carbon credits in respect of that certified vegetation for the balance of its estimated lifetime of 100 years which have not previously been claimed less (say) 33 1/3 %; or
- 8.2.2 retrospectively, the portion of those total carbon credits (without discount) which are applicable to the year then concluded (as a proportion of the total carbon credits).
- 8.3 In support of the Regularity Arrangements **Landcare** anticipates the insertion of appropriate deeming provisions in respect of sellers, lessee etc of Carbon Credits which would deem in respect of appropriate transactions:-
- Warranties as the existence of the appropriate Carbon Credits;
 - Warranties that no previous trading had occurred in respect of the appropriate Carbon Credits;
 - Warranties that the appropriate Carbon Credits were unencumbered;
 - Guarantee that the appropriate Carbon Credits would continue in existence for the contracted period;
 - Undertakings to ensure appropriate Carbon Credits; and
 - Arrangement of further deeming provisions which may be required in the circumstances.

BENEFITS

IX. Suggested benefits

Landcare contends that this model will have the following benefits-

- A. It establishes a self-funding regime whereby
 - 1. emitters are encouraged to reduce emissions
 - 2. alternatively, emitters are permitted to avoid penalty for their emissions by investing in the growing of eligible vegetation. This they may do in a variety of ways. These include
 - a) investing in the commercial growing of timber as a sole owner or as a joint venturer thereby acquiring limited carbon credits but profiting from the sale of the timber;
 - b) investing in licences given in respect of trees grown by a registered authority and intended to be permanent, thereby acquiring far greater carbon credits but no profit from timber sales.

There are many possible legal arrangements which can be devised which fall within these broad headings. Sufficient to say that the investment may be extremely profitable and does not require the emitter to be the sole investor or even the principal investor.
- B. It provides both positive and negative incentives towards the reduction of emissions
- C. It establishes a regime which is capable of an infinite number of adjustments and extensions which can be managed and adapted towards the overall end of reducing emissions to an acceptable level.
- D. It provides a cash flow for landowners in rural areas, assisting them in improving their land, controlling erosion and salinity and producing timber as the cashflow may be realised prior to harvest it will attract more investment into the sector.
- E. It reduces dependency on native forests as a source of timber, reduces dependency on imports for Australia's timber needs and eventually places the country in the position of becoming a substantial timber exporter.
- F. It has the effect, over time, of limiting the excessive growth of timber prices, particularly when native forests worldwide diminish as a source of timber. It assists in providing timber as a renewable source of energy and encourages enterprises to produce durable products.

- G. It provides employment over much of rural Australia not only in the growing of timber for commercial purposes but in regeneration projects as well.
- H. It provides new areas of employment for those already employed in the timber industry and the ability to remain in work for the whole of a year rather than in those parts of the year during which Alpine areas are accessible for logging.

DEFINITIONS

In this model-

“body corporate” includes every associated company (within the meaning of the *Corporations Law*) of that body corporate.

“carbon credit” means a GHG emission credit.

“certified vegetation” means vegetation in respect of which a qualified auditor has issued a certificate certifying that the vegetation is not less than 5 years old and is eligible vegetation.

“eligible vegetation” means the certified perennial vegetation of trees, shrubs, bushes, vines, seedlings, saplings and reshoots occurring after 1990

“emission” means a GHG emission occurring wholly or partly as the result of the consumption of fuel.

“emitter” means a **person** responsible for property (real or personal) from which emissions occur.

“GHG” means all greenhouse gases.

“fuel” means a combustible substance.

“person” includes a body corporate, a partnership or a trust.

“property” includes both real and personal property.

“year” means a year concluding 30 June.

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ELIGIBLE VEGETATION

Regulatory arrangements resulting from this Inquiry will need to specify the components of vegetation biomass that are eligible for assessment of ‘carbon credits’.

Carbon in biomass can ‘offset’ the global warming effect of CO₂ in 2 ways:

- **plant growth**, which involves a *net uptake* of CO₂ from the atmosphere and its sequestration in the form of plant tissues, lignin and cellulose.
- **carbon storage**, the *time* that plants or plant products hold carbon out of the atmospheric cycle. This can be considered as deferring or avoiding the emission of CO₂, and as offsetting a time-quantified emission.

Both these aspects need to be considered as *positive contributors* to national targets and to reducing the level of greenhouse gases in the atmosphere.

1 Plant growth

It is proposed that the following components of *vegetation growth* be considered as ‘eligible’ for counting towards ‘carbon credits’:

Uptake between 1990 and current date [Retrospective uptake]

1.1 Net carbon additions achieved up to date of measurement due to vegetation biomass in the current rotation planted since 1990. [Figure 1.1]

Meaning of terms:

Net carbon: Carbon content of vegetative matter after subtraction of an agreed baseline, and project emissions.

Vegetation biomass: Plant tissues including foliage, bark and wood above and below ground.

Current rotation: An existing plantation or stand of vegetation whenever and however established and whatever interventions (deliberate or otherwise) may have occurred in the past.

1.2 Net carbon additions achieved up to date of measurement due to vegetation biomass in the current rotation planted before 1990, but excluding biomass at 1990. [Figure 1.2]

Biomass at 1990: A measured, assessed or default quantity of biomass in a plantation as at 1990. [1990 is the agreed base year for assessing national emissions]

Prospective uptake:

1.3 Projection assessment of net carbon addition in vegetation biomass in the current rotation, discounted by applying prospective carbon discount factors. [Figure 1.3]

Projection assessment: An assessment of the future uptake of carbon into biomass storage that will be achieved by the subject planting.

Prospective carbon discount factors: A set of time-risk discount factors to convert future carbon uptake forecasts to present value carbon credits.

Note: If prospective uptake is accepted, there will be a ‘residual obligation’ on the claimant of carbon credits to demonstrate, at specified points in the future, that realised uptakes meet or exceed the amount claimed, transferred or sold.

2 Carbon storage

This submission proposes that existing vegetation be declared as an eligible category for carbon credits calculation purposes as follows:

2.1 Unprotected or protected vegetation comprising existing remnants and other mature vegetation

Unprotected vegetation: Vegetation existing on private or public property where no specific legal measure has been taken to protect or control its removal.

Protected vegetation: Action that legally prevents or directly controls the removal of vegetation.

[This may, for example, be demonstrated by one of:

- ◇ The gift or sale of the land to another party where the receiving party contracts to protect the vegetation using a complying legal contract.
- ◇ The signing of a Forest Property Agreement or common law agreement that constitutes a complying legal contract and that contract protects the vegetation.
- ◇ The signing of a Conservation Covenant (such as available through the Trust for Nature (Vic) adapted to be a complying legal contract protecting the vegetation.
- ◇ Addition of private forest to a Reserve or Park where it is protected by legislation.
- ◇ Amendment to a Planning Scheme (Vic.) that prohibits the removal of specified vegetation.]

Current workbooks on carbon in vegetation focus on growth quantification issues (NGGIC Workbook 4.2, 1997; GCO Draft Sinks Workbook, in prep.). Little attention is given to the equally important time factor. For this reason additional discussion is warranted here.

Relating ‘uptake’ to ‘storage’

It is commonly understood that a *growing* plant or forest acts as a sink to reduce atmospheric CO₂, thus ameliorating the enhanced greenhouse effect. It is less commonly understood that storage of carbon, including the retention of a remnant forest in ‘steady state’ (that is, in balance between incremental growth and decay) also benefits the greenhouse effect by avoiding an emission and by incremental uptake of carbon that replaces decaying biomass. [A good analogy is a drainage system with a retarding basin: the drains provide a service by removing surplus water from land; the retarding basin provides a service by preventing land from being flooded.]

Another useful analogy is to see the growth as *income* and the retained biomass as *capital*. For greenhouse purposes the aim is to convert as much biomass growth

‘income’ into retained biomass ‘capital’ as possible over each measurement period of 100 years. There is not much point growing trees quickly if we are not also taking measures to retain the grown biomass.

Importance:

Deforestation or land clearing constitutes a reduction of biomass carbon in storage. Clearing rates are in the order of 470,000 ha per year in Australia, hence this constitutes a significant emission. [1990 figures reported by NGGIC provided a ‘best guess’ of 152 Mt CO₂ emissions* resulting from land clearing. This represented **27%** of the total reported emissions for Australia that year, and was about twice the reported removals through forestry and other woody biomass growth (75 Mt CO₂)] [*Note: Revised methods result in a figure of 122.6 Mt CO₂ equivalent. (NGGIC, LUC&F, 1997, pxx)]

Given the relative importance of the *storage* role of vegetation, it is essential that careful consideration is given by this Inquiry and other policy bodies to identifying both ‘carrots and sticks’, including a market-related price mechanism to help achieve the desired retention of vegetation.

Policy responses:

It is perhaps easy to envisage a *penalty* for clearing. This might be imposed either through regulation or taxation. A more robust system will be one that includes a *financial incentive* to retain (and manage) existing forests and plantations for their carbon storage benefits. [Note that this will also encourage the growing of timber for durable products rather than pulp and firewood]

The question arises on how to provide a framework for price-driven market incentives for existing biomass in (say) a remnant forest, woodland, scrubland or mature plantation where the greenhouse benefits in the forthcoming 100 years relates, at least in part, to the biomass (duration of carbon storage) arising in a previous period.

PROPOSAL: Existing Vegetation Carbon Storage Benefits Model

An option suggested by this submitter is to establish a ‘**convention**’ or **default model** for existing and steady state biomass. It starts with the assumption that biomass in a ‘steady state’ remnant woodland or forest grown prior to 1990 (the base date for calculating credits) is a *greenhouse neutral emission over the 100 years following its uptake*. It is not counted as an actual emission because it still exists, but would be counted in the event of harvest, fire or other loss.

To determine the greenhouse benefits arising from *continuing storage* of vegetation biomass the model *hypothetically regrows* the same forest over the same period and at the same rate. **Figure 2.1** illustrates how this applies to the remnant vegetation case.

**Figure 2.1: Eligible vegetation: Existing Vegetation Carbon Storage Benefits
Model: Greenhouse neutral decay and hypothetical growth post 1990 in remnant
vegetation.**

Rd = Remnant vegetation (greenhouse neutral) decay function

Rg = Remnant vegetation growth function;

The retrospective greenhouse benefits of retention under this model would be calculated as:

Carbon Credit (tCyears) = Yn (no. of years since 1990) * steady state carbon in biomass (tC) / 200

Example: The retrospective Carbon Credit in 2020 for a remnant forest comprising 220 tC /ha would be:

$$CCr = 30 * 220 / 200 = 33 \text{ tCyears /ha.}$$

There is a case also for *prospective* claiming of carbon credits *by owners of protected vegetation* if a prospective carbon discount factor is applied and is backed up by regulations to verify performance or make good any shortfalls.

The decay function (Rd) would come into the calculations in the event that the forest was cleared or burnt out. For example, if burnt out in 2040, the emission to be brought to account would be 55 tC. The site would then commence regrowing at 1% pa.

By phasing out the pre-1990 biomass carbon over a period of 100 years it can be regarded as greenhouse *neutral* and need not be subtracted from the post 1990 claim. [This arises because the proportionate growth of biomass between 1890 and 1900 will be deemed under the 'convention' to have fulfilled its 'global warming offset' by 2000. The carbon taken up in 1989 and 1990 will have completed its offset service by 2089 and 2090 respectively. From 2090 onwards, all of the carbon in the remnant forest will, under this model, be offsetting post-1990 global warming.]

In practice, carbon credits would be calculated on *monitored total biomass* from the subject sites. This enables other factors such as improved management to be taken into account, together with reductions due to fire, drought, severe disease attack and other losses.

Unprotected stands of remnant vegetation would only qualify for *retrospective* analysis of the hypothetical regrowth under the model. Eligible *protected stands* could

also be able to claim *prospective* carbon storage benefits by applying the *prospective carbon discount factors* suggested in this paper (para 1.3).

Adding storage benefits to annual growth increments

The above storage benefits model can also be applied to the *plantations case* and hence modifies the growth shown in Fig.1.2 as illustrated in **Figure 2.2** below.

Figure 2.2: Eligible vegetation: Plantations case: Growth and storage benefits after 1990 for plantations commenced prior to 1990.

Figure 2.2 shows a plantation commenced in mid 1968, growing at an average rate of 10 tC /ha /y and due for harvest, at age 30 years, in mid 1998.

From 1990 the pre 1990 biomass carbon (220 tC /ha) commences a greenhouse neutral decay under the model by 1% pa. When harvested in 1998 the residual emissions are realised as follows:

$$\begin{aligned} \text{Post 1990 } & \textit{growth} \text{ component} &= 8 * 10 / 2 = 40 \text{ tCyears /ha} \\ \text{Add post 1990 } & \textit{storage} \text{ component} &= 8 * 220 / 200 = 8.8 \text{ tCy /ha} \\ \text{Total post 1990 } & \text{uptake and storage} &= 48.8 \text{ tCyears /ha} \end{aligned}$$

$$\begin{aligned} \text{Emissions to be counted after harvest in 1998 comprises:} \\ 220 \text{ tC /ha} - 8\% \text{ of } 220 \text{ tC in GH neutral emissions } (= 17.6 \text{ tCy /ha}) / 2 \\ = 220 - 17.6 / 2 = 101.2 \text{ tCyears /ha} \end{aligned}$$

$$\begin{aligned} \text{Net emissions to be brought to account against the next rotation:} \\ = 101.2 - 48.8 = 52.4 \text{ tCy /ha} \end{aligned}$$

[Note: The assumption of linear uptake enables easy calculation and checking against the average storage of carbon over the 30 year rotation:

$$\begin{aligned} \text{Average carbon in storage} &= 30 * 10 / 2 = 150 \text{ tC /ha} \\ \text{Check against example: } &101.2 \text{ (emissions)} + 48.8 \text{ (uptake)} = 150 \text{ tC /ha} \end{aligned}$$

Future rotations

The question as to whether a present value should be ascribed to prospective carbon uptake in (contracted) future rotations is open to discussion. This submission takes no strong position as to its inclusion other than to note that some innovative greenhouse mitigation schemes (eg Foster Foundation's 'Greenfleet' project) already appear to be relying on it, at least in part, to make their case to contributors (purchasers of carbon credits). In these circumstances, the eligibility of this category must be carefully addressed by the Inquiry. The proposed schedule of prospective carbon discount factors (set by government authority) can readily be expanded to cover time frames that encompass future rotations.

Expressed in the form used above, the proposal would be to include:

1.4 Projection assessment of carbon uptake in *future rotations* subject to a *complying legal contract* and prospective carbon discount factors.

[Figure 1.4]

Future rotations: Replanting or coppicing following harvesting of the current rotation.
Complying legal contract: A Forest Property Agreement (Forestry Rights Act 1996 Vic) or common law contract which obliges one of the parties to replant an area where the vegetation has been removed (whether by harvesting or specified loss) and includes an indemnification clause at least to the extent of replacing the claimable carbon credits. The contract must also include (standard) minimum requirements for monitoring, measurement and revision of projected carbon uptake.

Implications for government support of a vegetation carbon credit system

Regulatory and related support measures needed to make the above system work include:

- 1 Declaration of eligible classes of vegetation additions and storages
- 2 Definition of terms
- 3 Declare a 'convention' for calculating carbon credits from existing vegetation, covering cases of protected and unprotected vegetation.
- 4 Provide a model insert for use in a Complying Legal Contract.
- 5 Setting schedules of prospective carbon discount factors, or publish guidelines and require sink providers to *declare* the factors they have used.
- 6 Set requirements for claimants of prospective uptake to demonstrate achievement and the manner of confirmation. (Penalties needed in default).

[NOTE: Figures will be forwarded by mail]