EXPLANATORY STATEMENT

Issued by the Authority of the Parliamentary Secretary for Climate Change and

Energy Efficiency

Carbon Credits (Carbon Farming Initiative) Act 2011

Carbon Farming (Quantifying Carbon Sequestration by Permanent Environmental Plantings of Native Species using the CFI Reforestation Modelling Tool) Methodology Determination 2012

Background

The *Carbon Credits (Carbon Farming Initiative)* Act 2011 (the Act) enables the crediting of greenhouse gas abatement in the land sector. Greenhouse gas abatement is achieved by either reducing or avoiding emissions or by removing carbon from the atmosphere and storing it in soil or trees.

Abatement activities are undertaken as offsets projects. The process involved in establishing an offsets project is set out in Part 3 of the Act. An offsets project must be covered by and undertaken in accordance with a methodology determination.

Subsection 106 (1) of the Act empowers the Minister, by legislative instrument, to make a determination known as a methodology determination. The purpose of a methodology determination is to establish procedures for estimating abatement (emissions reductions and sequestration) and project rules for monitoring, record keeping and reporting on abatement.

A methodology determination must meet the offsets integrity standards set out in section 133 of the Act and the other eligibility criteria set out in section 106 of the Act. The Minister cannot make a methodology determination unless the Domestic Offsets Integrity Committee (DOIC) has endorsed the proposal under section 112 of the Act and advised the Minister of the endorsement under section 113 of the Act. The DOIC is an independent expert panel established to evaluate and endorse proposals for methodologies.

Application of the Methodology Determination

The Carbon Farming (Quantifying Carbon Sequestration by Permanent Environmental Plantings of Native Species using the CFI Reforestation Modelling Tool) Methodology Determination 2012 (the Methodology Determination) sets out the detailed rules for implementing and monitoring a sequestration offsets project under the Carbon Farming Initiative (CFI) that sequesters carbon in permanent plantings of trees on land that has been cleared or partially cleared for at least five years, or on which a known weed species is present and must be cleared.

An environmental plantings offsets project will lead to the establishment of permanent plantings of native trees in order to sequester carbon dioxide from the atmosphere and store it in the tree biomass and debris. Ancillary benefits from an environmental planting may include the enhancement of biodiversity, alleviation of dryland salinity, reduced wind and/or water erosion and, in limited circumstances, shade and shelter for livestock.

Project proponents wanting to implement the Methodology Determination must make an application to the Clean Energy Regulator (the Regulator) and meet the eligibility requirements for an offsets project set out in subsection 27 (4) of the Act. These requirements include compliance with the rules set out in the Methodology Determination. Abatement must be modelled using the CFI Reforestation Modelling Tool (RMT) which has been developed by Department of Climate Change and Energy Efficiency (the Department), available at <u>ncat.climatechange.gov.au/cfirefor/</u>.

Offsets projects that are undertaken in accordance with the Methodology Determination and approved by the Regulator can generate Kyoto or non-Kyoto Australian Carbon Credit Units (ACCUs) that can be sold to:

- Australian companies that must pay the carbon price established under the Clean Energy legislation;
- overseas entities that pay a carbon price; and
- businesses in Australia and overseas wanting to offset their own carbon pollution.

A project applying this methodology could be a Kyoto or a non-Kyoto offsets project, or may be made up of a combination of both Kyoto and non-Kyoto activities.

The criteria for Kyoto offsets projects are established in the Act and the *Carbon Credits* (*Carbon Farming Initiative*) *Regulations 2011* (the Regulations). The Regulator will determine whether a project is a Kyoto or non-Kyoto offsets project prior to declaring an eligible offsets project.

Public Consultation

The methodology proposal on which this Methodology Determination is based was developed by the Department in consultation with representatives from industry and local and state government.

The methodology proposal was published on the Department's website on 27 June 2011 to 26 July 2011 for public comment. The Interim Domestic Offsets Integrity Committee (Interim DOIC) considered the issues raised in public submissions during its assessment of the proposal as required under section 108 of the Act.

Sections 131 and 132 of the Act contain transitional provisions for the consideration of proposals by the Interim DOIC prior to the commencement of the Act.

Determination Details

The Methodology Determination is a legislative instrument within the meaning of the *Legislative Instruments Act* 2003.

The Methodology Determination commences retrospectively from 1 July 2010.

Subsection 12 (2) of the *Legislative Instruments Act 2003* provides that, for a legislative instrument to have effect before the date it is registered, it must not adversely affect the rights of any person or impose a liability on any person in respect of anything done or not done before the date of registration. The Methodology Determination does not offend against these

requirements. Retrospective application confers a benefit in that it allows persons to apply for and generate Australian Carbon Credit Units in circumstances where they would not normally be eligible to apply.

Details of the Methodology Determination are at <u>Attachment A</u>.

A Statement of Compatibility prepared in accordance with the *Human Rights (Parliamentary Scrutiny) Act 2011* is at <u>Attachment B</u>.

Attachment A

Details of the Methodology Determination

Part 1 Preliminary

1.1 Name of Methodology Determination

This section provides that the name of the Methodology Determination is the *Carbon* Farming (Quantifying Carbon Sequestration by Permanent Environmental Plantings of Native Species using the CFI Reforestation Modelling Tool) Methodology Determination 2012.

1.2. Commencement

This section provides that the Methodology Determination commences retrospectively from 1 July 2010.

Subsection 122 (3) of the Act provides that if a methodology determination is made on or before 30 June 2012, the determination may be expressed to have come into force on 1 July 2010.

1.3. Application

The effect of paragraph 106 (1) (a) of the Act is that a methodology determination must be expressed to apply to a specific kind of offsets project. The Methodology Determination applies to a sequestration offset project to establish and maintain a permanent planting that is also an environmental planting that has been established only by direct seeding or planting of trees that have the potential to attain a crown cover of at least 20 per cent across the area of land and a height of at least 2 metres on that land, in the circumstances set out in Part 2 of the Methodology Determination. The Methodology Determination does not apply to projects that are established by the promotion and management of natural seed sources or rootstock that result in regrowth.

The abatement activity is to promote the growth of native species in the project area in order to sequester carbon from the atmosphere in the living biomass and dead organic matter. The gases accounted for in the Methodology Determination are carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) and abatement must be quantified using the RMT. Abatement must be calculated in terms of the carbon dioxide equivalence of the greenhouse gases.

A project can only be approved as an offsets project if it is a specified offsets project (that is, it is on the positive list), and is not an excluded offsets project (that is, it is not on the negative list), as specified in the Regulations, and meets the criteria for declaration established by subsection 27 (4) of the Act.

A summary of the positive list and negative list is available on the Department's website at <u>www.climatechange.gov.au/government/initiatives/carbon-farming-initiative/activities-</u><u>eligible-excluded.aspx</u>, and includes:

- the establishment of permanent plantings on or after 1 July 2007;
- forestry projects accredited under the Australian Government's Greenhouse Friendly[™] initiative;
- permanent plantings projects accredited under the New South Wales Government's Greenhouse Gas Reduction Scheme, or the Australian Capital Territory Government's Greenhouse Gas Abatement scheme; and
- permanent plantings established before 1 July 2007 for which there is documentary evidence that demonstrates, to the satisfaction of the Regulator, that the primary purpose of the plantings was the generation of carbon offsets.

Subsection 2 clarifies that the Methodology Determination applies to a project established prior to 1 July 2010. If a project is established prior to 1 July 2010, a person will only earn credits for the abatement which occurs from 1 July 2010. Subsections 27 (15) and (16) of the Act prevent the crediting of abatement prior to this date.

1.4 Definitions

This section defines a number of terms used in the Methodology Determination.

Generally, where terms are not defined in the Methodology Determination, they have the meaning given by section 5 of the Act or in the Regulations.

Key definitions are:

- 'environmental planting', which refers to a planting of species that are native to the local area of the planting and are sourced from seeds that are from within the natural distribution of the species and are appropriate to the biophysical characteristics of the project area. An environmental planting may be a mix of trees, shrubs, and understorey species which reflects the structure and composition of the local native vegetation community. It may consist of a single species if monocultures naturally occur in the local area where the project is being established.
- 'non-forested land', which refers to a contiguous area of land which does not have a potential tree crown cover of more than 20 per cent across the land by trees with the potential to reach a minimum height of 2 metres in maturity in situ.
- 'permanent planting', which refers to a planting which is not a landscape planting and is not harvested other than:
 - (a) for thinning for ecological purposes; or
 - (b) to remove debris for fire management; or
 - (c) to remove firewood, fruits, nuts, seeds, or material that is to be used for fencing or as craft materials, if those things are not removed for sale; or

(d) in accordance with traditional indigenous practices or native title rights.

The Regulations establish that ecological thinning is the removal of some plants to improve the health and condition of the vegetation or vegetation community. For environmental benefit, all large standing trees (including dead trees) containing hollows and trees with signs of current or recent wildlife occupation should be retained.

- 'landscape plantings' refer to plantings in an urban centre or locality, being:
 - a) in a residential place (for example, in a backyard, park or on a nature strip);
 - b) on the grounds of a sporting facility, factory or other commercial facility;
 - c) on the grounds of a hospital, school or other institution; or
 - d) in a car park or cemetery.
- 'known weed species' refers to species listed on existing weed lists. The weeds lists
 produced by the Australian Government are accessible at
 <u>www.weeds.gov.au/weeds/lists/index.html</u>. This website includes links to weeds lists
 specified under state and territory law.
- 'CFI rainfall map' refers to the map that shows long-term average annual rainfall using data collected by the Bureau of Meteorology for the period from at least 1921 to 1995 as processed by the Department, available at ncat.climatechange.gov.au/cfirefor/.

The Act, Regulations and the Explanatory Statement are available at <u>www.comlaw.gov.au</u>.

Part 2 Project requirements

2.1 Requirements that must be met for an offsets project to be an eligible offsets project

The effect of paragraph 106 (1) (b) of the Act is that a methodology determination must set out requirements that must be met for the offsets project to be an eligible offsets project.

Subsections 2 - 7 specify a number of requirements that must be met for a project to be an eligible offsets project.

Subsection 2 enables a project to occur in all parts of Australia except the external territories on land which, for the five years prior to establishment, has either:

- been used for grazing, pasture management, cropping, nature conservation or settlement; or
- has not been used and regrowth has not occurred.

In addition, for the five years prior to establishment, the land must have been non-forested land, and woody plants such as trees, shrubs and invasive native scrub species must not have been removed, unless they were known weed species required to be cleared by law.

If a project area contains an area which does not meet the requirements of the Methodology Determination – for example it contains trees or a forest – this must be excluded spatially by identifying the area as an exclusion area.

The Methodology Determination does not apply to a project occurring in the external territories as the RMT cannot currently model sequestration in these areas.

Subsections 3 and 4 clarify that the project must consist of the establishment or maintenance of a permanent planting that is also an environmental planting that has been established only by direct seeding or planting of plants which includes trees that can attain a crown cover of at least 20 per cent across the area of land and can reach a height of at least 2 metres in maturity in situ.

Crown cover as a proportion can be estimated by multiplying planting density (trees per hectare) by crown area (in hectares). For example, a minimum planting density to achieve 20% crown cover with evenly-spread trees for a species with a crown diameter of 3.5 to 4 metres is about 150 - 200 trees per hectare. The table below provides guidance on the ratio of trees to crown cover for a given crown diameter. Planting in clumps or widely spaced rows will increase the required density. Project proponents are encouraged to plant more than the minimum number of trees to achieve greater than 20 per cent canopy cover, to allow a buffer for mortality. Ideally, the planting should reflect the natural density of the forest. This may also help with resilience to disturbances.

Mature crown diameter (m)	Estimated minimum number of trees per hectare required for 20% crown cover
5.0	102
4.5	126
4.0	159
3.5	208

Estimated minimum number of trees per hectare to achieve 20% crown cover

3.0	283
2.5	407
2.0	637

Subsection 4 establishes that ripping and mounding must not be used for site preparation over more than 10 per cent of a Carbon Estimation Area (CEA) in a project area which receives greater than 800mm long-term average annual rainfall according to the CFI rainfall map. This is because such activity can cause emissions that are not accounted for under this Methodology Determination.

Subsection 5 prevents certain activities from occurring in the project area which may impact on carbon stocks. Subsection 5 must be read in conjunction with the requirements for a permanent planting, defined at regulation 1.3 of the Regulations and outlined in the definition section above. According to paragraph 5 (a), biomass taken from plants thinned for ecological purposes must not be removed from the project area other than for fire management or in accordance with traditional indigenous practices or native title rights. Paragraphs 5 (b) and (c) specify that only fallen timber, as defined in section 1.4, may be removed for firewood and only 10 per cent of fallen timber may be removed as firewood each year. Firewood may only be removed for personal use. Paragraph 5 (d) prevents plants from being removed for fencing and does not allow livestock grazing in the project area for three years following the seeding or planting of plants in an area, or at any other time if this would prevent the regeneration of trees.

Subsection 6 clarifies that a project area must be stratified into CEAs and exclusion areas, in accordance with the CFI Mapping Guidelines. The CFI Mapping Guidelines are defined in the Regulations and set out minimum requirements for mapping a project area. The CFI Mapping Guidelines are published by the Department and are accessible at www.climatechange.gov.au.

Stratification of the project area may be done using either the CFI Mapping Tool available at <u>ncat.climatechange.gov.au/cfirefor/</u>or an alternative geographic information system. A project proponent must re-stratify a project area as necessary, for example if a management event or disturbance occurs or if site characteristics are found not to be uniform.

Subsection 7 specifies that project proponents must use the RMT to perform the calculations required by Part 3 of the Methodology Determination. The 'mixed species environmental planting setting' in the RMT must be used to do this. The RMT is a computer program that estimates greenhouse gas emissions and removals within the tree and debris carbon pools based on inputs of species, management regime and disturbance events. Ongoing scientific research into environmental plantings is currently being undertaken. These research findings are incorporated into the RMT from time to time to improve the accuracy of estimates of carbon sequestration associated with environmental plantings. Updates will take effect from

the time the RMT is adjusted. A variation of the Methodology Determination will not be required.

2.2 Requirements for a project area

A project area is the area of land on which an offsets project is carried out. A project area can cover multiple land areas or facilities. If the Regulator applies a carbon maintenance obligation to protect carbon stores on the land (subsection 97 (2) of the Act), it will apply to the whole of the project area and areas within the project area.

A project proponent is required to define the geographic boundaries of the project area when seeking a declaration of an eligible offsets project. The information and documentary requirements to identify a project area are specified in regulation 3.1 of the Regulations, which sets out the information which must accompany an application for a project to be declared an eligible offsets project.

This section of the Methodology Determination specifies that a project area must be stratified into CEAs and exclusion areas according to the site characteristics and management practices that effect growth in the area. A project area must contain at least one CEA.

2.3 Requirements for a carbon estimation area

This section specifies the requirements for stratifying a CEA in order to model abatement in the area using the RMT. Stratification must be in accordance with the requirements set out in the CFI Mapping Guidelines.

Stratification must be done according to actual site characteristics which will affect growth rates and not on estimates of growth rates within the planting area. Stratification is not required if the entire project area is homogenous both in site characteristics and management activities.

Proponents may use a range of approaches to determine the boundaries of a CEA, but must include at least one of:

- field surveys and sampling;
- aerial photographs;
- satellite imagery; or
- soil, vegetation and landform maps.

The use of GPS mapping is recommended, but is not required, when identifying CEA boundary locations.

CEAs do not have to be attached to one another, and can span the boundaries of multiple properties.

Requirement to include model point location

Each CEA must contain a static 'model point' location (latitude and longitude) for the purpose of estimation with the RMT. Points may not change over time unless the CEA is

re-stratified into two or more areas. A model point must be contained within the CEA and not within an exclusion area.

Planting and management of a carbon estimation area

A CEA must have uniform site characteristics that effect growth, for example, soil type, aspect and position on slope. In addition, a uniform management regime must be applied. For example, a CEA must be planted or seeded with the same species or mix of species, and planting must take place within a 30 day period. Thinning, weed control and the application of fertiliser must be done in a uniform manner. This is because plantings established on sites with different characteristics or using different management practices will sequester carbon at different rates and must be modelled individually.

Requirement to re-stratify a carbon estimation area

A CEA must be re-stratified following commencement of a project if management practices in the area change, including management to restore carbon in the area after a natural disturbance has lead to a reversal of carbon stores. In these cases, re-stratification must clearly delineate the affected area. Project proponents are not required to stratify for natural disturbance events which do not require a change to the management practices as these can be modelled by the RMT as a proportion of the CEA impacted.

Project proponents are also required to re-stratify if it is found that site characteristics are not uniform – for example, there is a large area of rock under part of the project area which was not obvious when the project was earlier stratified.

Information and documents to identify a carbon estimation area

The boundaries of a CEA must be identified on a geospatial map of the project area, in accordance with the CFI Mapping Guidelines. The boundaries of a CEA can, but do not have to be, identified at project commencement if the project is established on or after the date a project is declared an eligible offsets project. However, they must be identified when the first offsets report is submitted to the Regulator. If the planting was established prior to declaration of the project as an eligible offsets project, the boundaries must be identified as part of the project application. In all cases, a map showing the CEA boundaries must also be submitted to the Regulator whenever the project area is re-stratified.

2.4 Requirements for an exclusion area

An area of land must be defined as an exclusion area, in accordance with the CFI Mapping Guidelines, if it is an area of land within the project area to which this Methodology Determination does not apply. An exclusion area may adjoin, or be contained within the boundaries of, a CEA. If an area is defined as an exclusion area, it is excluded as a source of abatement for the project. An area must be an exclusion area if:

- the project activity cannot occur in the area, for example the area is a road, water course or large rock outcrop which materially affects the abatement calculation; or
- woody plants such as trees or shrubs have been removed from the area within five years of project commencement, other than known weed species required to be cleared by law.

Information and documents to identify an exclusion area

The boundaries of an exclusion area must be identified on a geospatial map of the project area, in accordance with the CFI Mapping Guidelines. For projects established on or after the date a project is declared an eligible offsets project, the boundaries of an exclusion area can, but do not have to be, identified at project commencement but must be identified when the first offsets report is submitted to the Regulator. If the planting was established prior to declaration of the project as an eligible offsets project, the boundaries must be identified as part of the project application. In all cases, a map showing the boundaries of an exclusion area must also be submitted to the Regulator whenever the project area is re-stratified and the exclusion area boundaries are affected or a new exclusion area is created.

Part 3 Calculating the carbon dioxide equivalent net abatement amount for a project in relation to a reporting period

Under the Methodology Determination, abatement is calculated as the change in the amount of carbon stored in a project area (through growth of trees, natural decay and disturbance events such as fire, pest, disease and storm), minus emissions resulting from fire, and minus emissions from fuel used to establish and maintain the project.

Division 3.1 Preliminary

3.1 General

This section clarifies that all calculations are in respect of activities done or outcomes achieved during the reporting period for a project. Where specified, the RMT must be used to generate data which must be used in the calculation of abatement.

The following table indicates all the parameters that are calculated or obtained for use in the equations and how these are derived.

Description of parameters used in equations

Parameter	Detail Description	Equation	Derived
t	Time in months	General	
r _p	The month ending the previous reporting period	General	
r _c	The month ending the current reporting period	General	
n	Number of Carbon Estimation Areas within the Project Area	General	
IC _{CEA,i}	Initial Carbon Stock within Carbon Estimation Area (i)	Equation 1a	Modelled using the RMT
IC _{PA}	Initial Carbon Stock within the Project Area	Equations 1a, 2a, 2b	Calculated
IC _{PA} (r _p)	Initial Carbon Stock within the Project Area for the previous reporting period	Equation 2b	Calculated
$C_{CEA,i}(r_c)$	Carbon Stock within the Carbon Estimation Area for the current reporting period	Equation 1b	Modelled using the RMT
C _{PA} (r _c)	Carbon Stock within the Project Area for the current reporting period	Equations 1b, 2a, 2b	Calculated
C _{PA} (r _p)	Carbon Stock within the Project Area as reported in the previous reporting period	Equation 2b	Calculated
$\Delta C_P (r_c)$	Carbon Stock Change for the current reporting period	Equations 2a, 2b	Calculated

$\Delta C_{CO2}(\mathbf{r_c})$	Carbon Stock Change (in carbon dioxide equivalence - CO ₂ -e) for the current reporting period	Equations 4, 11	Calculate
E _{P,CH4} (r _c)	Emissions of methane (CH ₄) (in carbon dioxide equivalence - CO ₂ -e) from biomass burning for the current reporting period	Equations 5, 7	Calculated
$\mathrm{E}_{\mathrm{P,N2O}}\left(\mathrm{r_{c}} ight)$	Emissions of nitrous oxide (N ₂ O) (in carbon dioxide equivalence - CO ₂ -e) from biomass burnings for the current reporting period	Equations 6, 7	Calculated
$\mathbf{M}_{tb,i}$	Tree layer carbon emitted to the atmosphere for each month in the reporting period	Equations 5, 6	Modelled using the RMT
$\mathbf{M}_{\mathrm{db,i}}$	Debris layer carbon emitted to the atmosphere for each month in the reporting period	Equations 5, 6	Modelled using the RMT
E _F (r _c)	Total carbon dioxide equivalent (CO_2-e) emissions from biomass burning for the current reporting period	Equations 7, 11	Calculated
Qi	The quantity of fuel type (i) (kilolitres) combusted monthly for: (a) stationary energy purposes; and (b) transport energy purposes	Equation 8	Collected
$\mathbf{Q}_{i}\left(\mathbf{r}_{c} ight)$	The quantity of fuel type (i) (kilolitres) combusted for the current reporting period	Equations 8, 9	Collected
q	Number of gas types (carbon dioxide, methane or nitrous oxide) combusted from fuel	Equations 9, 10	CO ₂ , N ₂ O, CH ₄

р	Number of fuel types	Equations 8, 9, 10	Collected
EC _i	The energy content factor of fuel type (i) (gigajoules per kilolitre) (If Q _i is measured in gigajoules, then EC _i is 1)	Equation 9	NGERS
EF _{ijoxec}	The emission factor for each gas type (j) (which includes the effect of an oxidation factor) for fuel type (i) (kilograms in carbon dioxide equivalence - CO ₂ -e per gigajoule)	Equation 9	NGERS
$\mathbf{E}_{\mathbf{E}}(\mathbf{r}_{\mathbf{c}})$	Total project fuel emissions for the current reporting period	Equations 10, 11	Calculated
$A_p(r_c)$	Project abatement (in carbon dioxide equivalence - CO ₂ -e) for the current reporting period	Equation 11	Calculated

* Note: Equation 3 has deliberately been omitted from the Methodology Determination.

Some of the calculations must use a factor or parameter which is specified in the Measurement Determination made under subsection 10 (3) of the *National Greenhouse and Energy Reporting Act 2007* as in force from time to time, and the *National Greenhouse and Energy Reporting Regulations 2008* (the NGER Regulations). Both the NGER Measurement Determination and the NGER Regulations are amended from time to time. The purpose of subsection 3.1 (2) of the Methodology Determination is to clarify that if either the NGER Measurement Determination or the NGER Regulations are amended during an offsets reporting period, the calculations done under Division 3.2 of the Methodology Determination must use the factor or parameter prescribed in the relevant instrument in force at the time the report is submitted or is required, whichever is earlier. The table below sets out the factors or parameters to be used in the calculation of abatement other than those used to calculate emissions from fuel and electricity.

Factors or Parameters found in the NGER Regulations to be used in the calculation of abatement

Factor or Parameter	Reference	Value of Factor or Parameter at 1 January 2012	
GWP _{CH4}	The global warming potential of methane as specified in the NGER Regulations	21	

3.2 Greenhouse gas assessment boundary

This section describes the greenhouse gas sources and sinks and relevant carbon pools that need to be assessed in order to determine the amount of carbon dioxide removed from the atmosphere when undertaking the project activity. The greenhouse gas assessment boundary includes the tree and debris carbon pools within the project area and the emission of greenhouse gases from establishing and managing the project.

The carbon pools and emission sources which need to be taken into account when calculating abatement for the project are set out in the following table.

Emissions and removals in the project boundary

Emissions from and removals to the above and below ground tree and debris pools			
Increases in carbon stocks relating to tree growth			
Reductions in carbon stocks relating to decay			
Reductions in carbon stocks relating to disturbance – fire or management events			
Emissions from fire			
Methane emissions from fire – prescribed and uncontrolled			
Nitrous oxide emissions from fire – prescribed and uncontrolled			
Emissions from project activities			
Fuel use emissions from use of vehicles and machinery for planning, site selection, site preparation and seed collection			
Fuel use emissions from use of vehicles and machinery during establishment operations			
Fuel use emissions from use of vehicles and machinery for management operations, including thinning and fire control			
Fuel use emissions from use of vehicles and machinery for transportation and travel			

Fuel use emissions from use of vehicles and machinery for transportation and travel (of people or supplies) between business locations, or for deliveries to the project site

A number of emission sources are excluded from the abatement calculations for the following reasons:

- emissions from soils are excluded as these are not a net source of emissions over the life of the project;
- emissions from the removal of pre-existing non-woody vegetation are excluded as the Methodology Determination only applies to projects on non-forested land which has not been cleared in the five years prior to project commencement. It is assumed that non-woody biomass which is cleared for site preparation will be approximately equal to or less than the forest understorey (which is not included in abatement calculations) and therefore the effect is negligible. Emissions from the required removal of known weed species from the project area are not included in the project greenhouse gas assessment boundary as it is assumed that this would be expected to occur under the baseline conditions. The clearing of forests in order to undertake future reforestation projects is restricted by the Regulations. Other woody vegetation can be excluded spatially (that is, in an exclusion area);
- emissions from household fires resulting from the burning of fallen timber are excluded as they are immaterial;
- emissions from nursery operations (materials, fertiliser, electricity) are excluded as they are immaterial relative to abatement over the life of the project;
- emissions from fertiliser use or lime application are excluded on the grounds that they are immaterial to the total abatement achieved by the project;
- emissions from grazing of livestock in the project area are excluded as grazing is not permitted in the first three years after tree planting or seeding post project commencement to allow the trees to establish and any grazing after this time must not prevent tree regeneration in the project area. It is therefore highly unlikely that the project would result in an increase in livestock numbers and therefore emissions.

3.3 Calculating the baseline for the project

This section specifies the process for identifying a project baseline as required under paragraph 106 (4) (f) of the Act. The baseline for a project is estimated to be zero. This is because under grazing, pasture management, cropping or settlement, regrowth is assumed to be suppressed, and under nature conservation or no use, where regrowth has not already occurred over a five year period, conditions are assumed to prevent natural regrowth.

Division 3.2 Calculations

This Division includes a detailed description of the formulas used for calculating net greenhouse gas abatement for the project area.

To calculate abatement, project proponents must undertake the following steps:

- 1. Determine the initial carbon stock for each CEA. For projects commencing from the date the project is declared an eligible offsets project, the initial carbon stock is taken to be zero. For projects established prior to the date the project is declared an eligible offsets project, the initial carbon stock is the carbon stock at the date the declaration of the eligible offsets project takes effect. The RMT must be used to determine this amount.
- 2. Sum the initial carbon stock for each CEA to determine the initial carbon stock for the project area.
- 3. Use the RMT to calculate the carbon stock for the month ending the reporting period for each CEA.
- 4. Sum the carbon stock at the end of the reporting period for all CEAs to obtain that for the project area.
- 5. Determine the change in carbon stock in the project area from the growth of biomass since the previous report and convert this to the carbon dioxide equivalent.
- 6. Use the RMT to calculate changes in carbon stock due to emissions from fire and calculate the emissions of methane and nitrous oxide.
- 7. Collect data and calculate total emissions from fuel use.
- 8. Subtract the carbon dioxide equivalent of total project emissions due to fire and fuel use from the carbon dioxide equivalent of the carbon stock change.

Subdivision 3.2.1 Calculating the carbon dioxide equivalent net abatement amount

This subdivision outlines equations required to calculate the carbon dioxide equivalent of greenhouse gases sequestered within the project area. This is done by calculating the carbon stock change within the project area.

3.4 Calculating the initial carbon stock of the project

The initial carbon stock within the project area must be calculated using Equation 1a.

For a project established on or after the project is declared to be an eligible offsets project, the initial carbon stock is taken to be zero.

For a project established before the project is declared to be an eligible offsets project, the initial carbon stock is taken to be the carbon stock actually present in each CEA at project declaration. This must be determined by the RMT in order to exclude biomass growth prior to

project declaration. This ensures that carbon stocks occurring prior to project declaration are excluded from the abatement calculations and are not credited.

For example, a plantation may be established on 1 July 2009. In September 2012, the Regulator declares the project to be an eligible offsets project, effective from 1 July 2010. In this case, the initial carbon stock is the amount that was present in the area on 1 July 2010.

Subsection 27 (15) of the Act enables a project declaration to take effect from the date it is made or, with the agreement of the applicant, at an earlier specified date that is not earlier than 1 July 2010.

Unless the initial carbon stock is zero, the initial carbon stock for a project area must be recalculated each time a report is submitted to the Regulator to ensure updates to data underlying the RMT are taken into account. The 'mixed environmental plantings' species setting in the RMT enables project proponents to stratify areas with a significant variation in the species or species mix. Proponents may be able to select more specific settings in the future as the RMT is updated with findings from scientific research to improve the accuracy of estimates of carbon sequestration associated with environmental plantings.

3.5 Calculating the carbon stock of the project area at the end of a reporting period

The carbon stock within a project area at the end of a reporting period must be calculated using Equation 1b. The carbon stock of each CEA within the project area must be determined using the RMT and the amounts must be aggregated, using Equation 1b.

3.6 Calculating the carbon stock change for the project area

The carbon stock change for the project area for the first reporting period must be calculated using Equation 2a and for the second and subsequent reporting periods using Equation 2b.

In the first reporting period, the carbon stock change is the carbon stock at the end of the reporting period determined using the RMT minus the initial carbon stock.

In the second and subsequent reporting periods, the carbon stock change is calculated in the following way:

- 1. Determine the carbon stock for the reporting period at the month ending the reporting period using the RMT;
- 2. Subtract from this amount the carbon stock reported for the end of the previous reporting period at the month ending that reporting period;
- 3. Recalculate the initial carbon stock at the time of submitting the report using the RMT; and
- 4. Subtract from this amount the initial carbon stock reported for the previous reporting period.

If the initial carbon stock for the project is zero, it is not necessary to perform steps 3 and 4 as the initial carbon stock in that case will always be zero.

Equation 2 has been designed to enable changes to the underlying datasets of the RMT to be incorporated into the carbon stock change calculation. This ensures proponents are credited according to estimates generated using the most recent data included in the RMT.

3.7 Converting the carbon stock change to carbon dioxide equivalent (CO₂-e)

Section 3.7 requires the carbon dioxide equivalent (CO_2 -e) of the carbon stock change to be calculated using Equation 4 for use in subsequent equations. The Global Warming Potential of carbon dioxide is 1.

Subdivision 3.2.2 Calculating the carbon dioxide equivalent of offset project emissions

3.8 Calculating methane and nitrous oxide emissions from biomass burning

This section sets out the calculations that must be done to calculate the emission of methane and nitrous oxide from burning biomass due to forest fires. Project proponents are required to model emissions from fire for all months within the reporting period using the RMT. The RMT must be used to calculate the tree layer carbon and the debris layer carbon emitted to the atmosphere in tonnes for each month of a reporting period.

Equation 5 must be used to calculate emissions from methane (CH₄) due to fire for the project.

Equation 6 must be used to calculate emissions from nitrous oxide (N_2O) due to fire for the project.

Equation 7 must be used to calculate the total non-CO₂ emissions from fire.

3.9 Calculating emissions from fuel use

The total emissions from the use of fuel in undertaking project activities in the project area must be estimated using the energy content and emission factors outlined in Schedule 1 of the NGER Measurement Determination. The relevant energy content and emission factors are included, with worked examples, in the National Greenhouse Accounts Factors National Greenhouse Accounts Factors available at <u>www.climatechange.gov.au/climate-change/emissions.aspx</u>.

If the NGER Measurement Determination is amended during the offsets reporting period, the estimation of emissions must use the factor or parameter which is specified in the Determination in force at the time a report is submitted or required, whichever is the earlier.

Emissions from fuel use must be calculated using Equation 9 for each fuel type (i) and each greenhouse gas (j), (ie. CO_2 , N_2O , CH_4). The total emissions from fuel for the reporting period must be calculated using Equation 10.

Subdivision 3.2.3 Calculating the carbon dioxide equivalent net abatement amount

3.10 Calculating the carbon dioxide equivalent net abatement amount

Paragraph 106 (1) (c) of the Act provides that a methodology determination must specify a method for calculating the carbon dioxide equivalent net abatement amount for the project in relation to a reporting period.

The carbon dioxide equivalent net abatement amount must be calculated for a reporting period using Equation 11. Net abatement for the reporting period is the carbon stock change less emissions from biomass burning and fuel use. Project proponents are entitled to Australian Carbon Credit Units (ACCUs) equal to the amount of abatement measured according to the Methodology Determination for the reporting period minus the risk of reversal buffer, assuming all other eligibility criteria continue to be met. The risk of reversal buffer is 5 per cent unless another percentage is specified in the Regulations (subsection 16 (2) of the Act).

Division 3.3 Data Collection

3.11 Reforestation Modelling Tool

The effect of paragraph 106 (3) (c) of the Act is that a methodology determination may require the project proponent of an eligible offsets project to comply with specified record-keeping requirements relating to the project. A project proponent for an eligible offsets project who fails to comply with a record-keeping requirement relating to the project will have contravened a civil penalty provision (section 193 of the Act).

This section provides that project proponents must use the 'mixed species environmental planting' setting in the RMT to estimate sequestration in above and below ground carbon pools, emissions from disturbance and the effects of management actions to be used in the calculation of abatement. It also specifies the parameters that must be supplied from the RMT for use in calculating abatement.

The area and model point location (latitude and longitude) data for each CEA must be collected using the CFI Mapping Tool or alternate geospatial information system, in accordance with the CFI Mapping Guidelines, and reported to the RMT. Information about forest management and disturbance events must also be supplied to the RMT.

For a disturbance event, the following information must be supplied to the RMT:

- the timing of the event,
- the location of the event in the project area, and
- the area affected (proportion of CEAs), and whether trees are killed or have survived in each area.

The RMT generates output data for emissions and removals from the tree and debris pools which must be used to calculate abatement.

RMT output data required for calculating abatement

RMT Output	Unit	Description	Form	Parameter
C mass on-site	tonnes C	Carbon stock – tree and debris pools	Time series (cumulative monthly)	C _{CEA}
C mass emitted from debris due to fire	tonnes C	Carbon emitted to the atmosphere - debris layer	Time series (monthly)	M _{tb}
C mass emitted from trees due to fire	tonnes C	Carbon emitted to the atmosphere - tree layer	Time series (monthly)	M _{db}

The equations in the Methodology Determination take account of the form of RMT outputs, including that:

- carbon stock is the cumulative total, while emissions due to fire are presented as per-month estimates; and
- RMT outputs are presented in tonnes of carbon and must be converted to tonnes of carbon dioxide equivalence (CO2-e).

3.12 Fuel use emissions

A record of the quantity of each fuel type to establish and maintain the project for each reporting period must be kept on a monthly basis in order to calculate project emissions from fuel use.

Part 4 Monitoring, Record-keeping and Reporting Requirements

Division 4.1 General

4.1 Application

The effect of paragraph 106 (3) (d) of the Act is that a methodology determination may require the project proponent of an eligible offsets project to comply with specified requirements to monitor a project.

A project proponent for an eligible offsets project who fails to monitor a project in accordance with any monitoring requirements in the applicable methodology determination will have contravened a civil penalty provision (section 194 of the Act).

The monitoring, record-keeping and reporting requirements specified in this part are addition to any requirements specified in the Regulations.

4.2 Geospatial information requirements

This section establishes that proponents must use either the CFI Mapping Tool or an alternative geographic information system to monitor and report on spatial information concerning the offsets project. The boundaries of the project area, CEAs and exclusion areas within a project area must be provided to the RMT and defined in accordance with the CFI Mapping Guidelines.

Division 4.2 Monitoring requirements

4.3 Project monitoring

Project proponents must monitor a project area and adjust the boundaries of areas within the project area if they no longer meet the requirements of the Methodology Determination or require further stratification. The information on changed boundaries must be provided to the RMT and a record of the new boundaries must be kept by the project proponent.

Project proponents must monitor disturbances in a project area and report this information to the RMT. The timing of the event, the location of the disturbance in the project area, the area affected (proportion of CEAs), and whether trees are killed or survived in each area must be reported.

On-ground observation or satellite imagery or both may be used to monitor projects.

Division 4.3 Record-keeping requirements

4.4, 4.5, 4.6 Records that must be kept

This section of the Methodology Determination specifies the records that must be kept in relation to the project. Section 4.5 specifies the records that constitute forest management information. Section 4.6 specifies the records that constitute project area information.

Acceptable records include:

- invoices and receipts;
- contracts;
- detailed logbooks of activity where the activity has not been undertaken by a third party; and
- references to published literature.

Division 4.4 Offsets report requirements

Project proponents will be required to submit:

- a report for the first reporting period; and
- ongoing reports for subsequent reporting periods.

4.7 Information that must be included in the first offsets report

This section sets out the information that must be included in project reports for the first reporting period.

4.8 Subsequent reporting periods

This section sets out information that must be included in the ongoing and subsequent project reports.

Attachment B

Statement of Compatibility with Human Rights

Prepared in accordance with Part 3 of the Human Rights (Parliamentary Scrutiny) Act 2011

Carbon Farming (Quantifying Carbon Sequestration by Permanent Environmental Plantings of Native Species using the CFI Reforestation Modelling Tool) Methodology Determination 2012

This Legislative Instrument is compatible with the human rights and freedoms recognised or declared in the international instruments listed in section 3 of the *Human Rights* (*Parliamentary Scrutiny*) Act 2011.

Overview of the Legislative Instrument

The Carbon Farming (Quantifying Carbon Sequestration by Permanent Environmental Plantings of Native Species using the CFI Reforestation Modelling Tool) Methodology Determination 2012 (the Methodology Determination) sets out the detailed rules to implement and monitor a sequestration offsets project under the Carbon Farming Initiative (CFI) that sequesters carbon in permanent plantings of trees on land that has been cleared or partially cleared for at least five years, or on which a known weed species is present and must be cleared.

Project proponents wanting to implement the Methodology Determination must make an application to the Clean Energy Regulator (Regulator) and meet the eligibility requirements set out under the Act. Offsets projects that are approved by the Regulator can generate Kyoto or non-Kyoto Australian Carbon Credit Units that can be sold to:

- Australian companies that must pay the carbon price established under the Clean Energy legislation;
- overseas entities that pay a carbon price; and
- businesses in Australia and overseas wanting to offset their own carbon pollution.

Human rights implications

This Legislative Instrument does not engage any of the applicable rights or freedoms.

Conclusion

This Legislative Instrument is compatible with human rights as it does not raise any human rights issues.

Mark Dreyfus, Parliamentary Secretary for Climate Change and Energy Efficiency