Australian Government
Department of the Environment and Energy

Understanding Savanna Fire Management Methods in the Emissions Reduction Fund

Frequently Asked Questions

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Savanna Fire Management Methods – Frequently Asked Questions

The following collection of FAQs have been prepared to help the reader understand the 2018 savanna fire management methods. They are based on common questions that have been raised by the savanna carbon farming community, as well as other questions and answers you might find useful.

Further enquiries, and suggestions for new FAQs, can be sent to: savanna@environment.gov.au

The Clean Energy Regulator also provides information to make running a savanna fire management project easier: http://www.cleanenergyregulator.gov.au/ERF

The FAQs presented here do not replace or override other documents including the legislative instruments, the Explanatory Statements, the Savanna Technical Guidance Document or other published fact sheets and information.

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Savanna fire management projects

1. What is ‘savanna fire management’?

The aim of savanna fire management projects is to reduce high intensity fires in the late dry season. Lighting smaller, controlled fires in the early dry season means those fires are likely to be less intense. Managing fires to promote less intense, early dry season fires reduces greenhouse gas emissions and also increases carbon stored in dead organic matter.

Fire management can occur at any time of year and can include igniting fires from aircraft, from vehicles along the sides of roads and tracks, from boats on waterways, or by walking across country. Fire management can also involve suppression activities. The specific location and timing of burning will depend on landscape features within the project area and local weather conditions. Fire management should also take into account cultural and environmental management factors.

2. What are the key differences between ‘sequestration’ projects and ‘emissions avoidance’ projects?

Emissions avoidance offsets projects receive carbon credits after greenhouse gases are reduced or avoided from being released into the atmosphere. Once emissions have been reduced or avoided, there has been a permanent 'avoidance of emissions'. Emissions avoidance projects can cease the activity being undertaken and leave the Emissions Reduction Fund (ERF) at any time. If the project leaves the ERF, carbon credits cannot be claimed again for a savanna fire management project in the same area.

Sequestration offsets projects receive carbon credits for carbon that is stored in the landscape. This stored carbon must remain in the landscape for at least the ‘permanence period’ for the project. The permanence period is either 25-years or 100-years. Project proponents must meet obligations in the CFI Act to maintain the carbon stored in the landscape for the duration of their permanence period. If projects leave the ERF before the end of their permanence period, they would need to hand back any credits that have been issued over the life of the project (because the carbon was not stored for either 25 or 100 years). Savanna sequestration projects also receive credits for avoiding emissions.

3. What does project activity mean?

All ERF methods define a 'project activity'. This is the activity that the people doing the project must do to avoid or reduce greenhouse gas emissions and/or to store (sequester) carbon. To do a savanna ERF project, the project proponent must undertake annual planned burning that meets the objectives of reducing greenhouse gas emissions and, if a sequestration project, increasing the carbon stored in dead organic matter.

In some project areas it may not be possible to undertake planned burning in some years. For example, if it is raining for most of the early dry season there may be limited opportunities for planned burning. In such a case, in order to remain as an eligible offsets project, the project will need to demonstrate that planned burning was not undertaken due to circumstances

beyond their control. Under these circumstances, the project would not become an ineligible offsets project.

4. Are the project activities different between 'sequestration' and 'emissions avoidance' projects?

No. The same fire management activities are involved for savanna fire management sequestration and emissions avoidance projects, and emissions avoidance (only) projects. The main difference between the two project types is the permanence obligations under the ERF which only apply to sequestration offsets projects.

Project management plan requirements

5. Why do I need to prepare a 'project management plan' each year, and what needs to be included in it?

Projects must keep doing the project activity to remain as eligible offsets projects. Project management plans assist project proponents to demonstrate how the outcome of decreasing emissions or increasing sequestration is being achieved through undertaking the project activity. The methods themselves and the savanna technical guidance document contain information on what needs to be included.

An annual project management plan must be prepared that describes the planned burning for each project area. The *savanna technical guidance document* provides guidance for preparing project management plans. This plan must be prepared before the start of the planned fire management, and can be updated during the fire season to reflect responses to emerging conditions. Annual project management plans must be included as part of a project's offsets report. In addition, projects must report on the timing, location and extent of all planned burns.

6. If I already prepare a fire management plan for another purpose, do I need to do a different plan for the 'project management plan'?

The 2018 methods describe what needs to be included in the project management plan (which is part of the offsets report that is submitted to the Clean Energy Regulator). Sometimes, this information might be contained in another document that is prepared as part of the project (such as a fire management plan). If that is the case, then that document, or the relevant parts of it, can be submitted to the Clean Energy Regulator as part of the project management plan (or referred to in the plan). Projects are not required to submit the same information twice.

Sequestration projects: Permanence, Crediting and Reporting

7. Can you explain what is meant by crediting period, permanence obligations, permanence period, carbon maintenance obligation, and reporting period?

Crediting period: this is the length of time that a project can earn Australian carbon credit units. For savanna projects (both sequestration and emissions avoidance projects, and emissions avoidance only projects), this is normally 25 years, but can be longer in some circumstances. The crediting period for a project normally starts on the date that the project was declared.

Reporting period: every eligible offsets project must provide offsets reports to the Clean Energy Regulator. The length of time that is covered by an offsets report is the reporting period. For emissions avoidance offsets projects, offsets reports must be provided at least every 2 years. For sequestration offsets projects, offsets reports must be provided at least every 5 years.

Permanence obligations: this is a general term used to capture the requirements for sequestration projects in the scheme which mean credited carbon stores must be either maintained or credits returned to the Government.

Permanence period: this is the length of time that the project must maintain the carbon that is sequestered by the project. The period is nominated by the project proponent and is either 25 or 100 years. The permanence period commences when the first Australian carbon credit units are issued for the project (but can also be extended when land is added to a project). If carbon stores are not maintained, credits may need to be returned to the Government.

Note: Even though the crediting period and permanence period might both be 25 years for a project, the crediting period will always start before the permanence period. There could be up to 5 years or more difference between the start of a crediting period and the start of the applicable permanence period.

Carbon maintenance obligation: this is a particular permanence enforcement mechanism which relates only to sequestration offsets projects. If an obligation is imposed by the Regulator it can restrict activities on the land impacting carbon stores and means that the owner or occupier of the land must maintain the carbon that is stored on the land by the project activity. They can last for the length of the project's permanence period.

8. How do the two possible 'permanence periods' for a sequestration project work?

The permanence period for a savanna sequestration project is the length of time project activities are required to be continued so carbon stores are kept in the landscape. Sequestration offsets projects can be either 25-year permanence period projects or 100-year permanence period projects. The period is nominated by the project participant when the project is registered. The permanence period actually starts from the first time credits are issued to a project and will last for either 25 or 100 years, as nominated by the project participant. Projects with 25 year permanence periods receive less credits in recognition of the

risk to the Government of the stored carbon not remaining in the landscape for the 75 years following the end of the project.

During the permanence period, whether it is 25 or 100 years, if there is a 'reversal' of the carbon stored which meets certain criteria in the ERF – such as through the discontinuation of the project activity, the Clean Energy Regulator can seek credits back from the project and/or apply a carbon maintenance obligation to restrict the activities which may be conducted on the land. If a carbon maintenance obligation applies, the owner or occupier of the land is also required to take all reasonable steps to re-establish carbon stores if further reversals occur. This may involve further fire management to rebuild carbon stores and the start of the applicable permanence period.

9. What is the effect of the different permanence periods on the amount of offsets that my project might earn?

Sequestration projects with a 25-year permanence period have a 20 per cent discount on their carbon credits for stored carbon. This discount is called the 'permanence period discount'. The permanence period discount applies to all sequestration projects under any method, not just savanna fire management. It helps manage the scheme-wide risk to Government if carbon stores are not maintained after the end of the permanence period for 25-year permanence period projects.

The permanence period discount only applies to the credits earned for sequestration (i.e. it does not apply to credits for avoided emissions). This discount is additional to the general 'risk of reversal buffer discount' applied to sequestration projects regardless of their permanence period. (See *What are the 'discounts' in the 2018 sequestration method?* for further information).

There is no permanence period discount for 100-year permanence period projects.

10. If my project is a 100-year permanence period project, what do I need to do after the crediting period ends?

If a project proponent elects a 100-year permanence period for their project, they must continue to ensure that the carbon sequestered (as a result of undertaking the project activity) remains stored in the project area for the length of the permanence period. It is not possible to keep carbon stored in the coarse and heavy debris pool in the project area without continued fire management throughout the permanence period. This means that the project activity needs to continue after the crediting period has finished. Project proponents should make sure that they can continue project fire management activities after their crediting period ends, when deciding whether to elect a 100-year permanence period.

Savanna sequestration offsets projects with a 100-year permanence period will be required to provide a clear explanation at the declaration of the offsets project of the steps they intend to take to keep carbon in the project area. They must update this information in two offsets reports during the crediting period. This should take into account the particular risks of reversal for such projects. Proponents should also be aware that offsets reports for savanna sequestration projects will be required every five years throughout the entire 100-year permanence period for the project. Credits are only issued for the crediting period, with no

further credits being issued after the crediting period for either sequestration or emissions avoidance.

11. Does the 25-year crediting period end at the same time as the 25-year permanence period for a 25-year permanence period project?

No. The 'permanence period' is calculated from the time credits are first issued for the project, which could be after the first five years of the reporting period (if the project proponent chose to wait five years before submitting their first offsets report), or after the first project year reported where there is positive net abatement. For instance, if a sequestration project started on 1 January 2020, reported in March 2025 for a five year reporting period and received credits on 1 April 2025, their 25-year permanence period would end 31 March 2050. However, their 25-year crediting period would end on 31 December 2045. The permanence period can also be extended when land is added to a project. There will always be a gap between the end of the crediting period and the end of the permanence period.

If the first one or more offsets reports were for years with no net abatement, then no credits would be issued. The permanence period does start until after an offsets report with positive net abatement is submitted and then credits are issued.

12. Can I reduce the gap between the end of my crediting period and the 25-year permanence period?

Earlier reporting (and earlier crediting) for a project would reduce the gap between the end of the crediting period and the end of the permanence period.

For restarting transferring projects it would be important to:

a) transfer across to the new savanna sequestration method within the five year window provided for these transferring projects to become a new project with a 25-year crediting period; and

b) submit their first report after the first year of project activities so the permanence period starts from when those credits are issued, at around a year after the crediting period starts.

However, given the need for annual accounting of emissions after the end of a calendar year, there is likely to be at least a year's gap between the last fire season credited and the end of the permanence period.

13. How can businesses balance risk management and the choices between a 25-year and a 100-year permanence period project?

This is an important thing to consider for projects thinking about a project with a 100-year permanence obligation (with no permanence period discount) and a 25-year permanence period project (with a 20% permanence period discount). The Department and the Clean Energy Regulator have a number of resources available.

- For an overview of permanence obligations see here and here.
- To learn how to identify land subject to permanence obligations see here.
- For information when considering engaging a carbon service provider, see here.

14. How will the government ensure that the project activity continues beyond the crediting period for projects with 100-year permanence periods?

Projects have ongoing reporting requirements following the crediting period and during the permanence period. The Clean Energy Regulator will manage compliance with projects for the duration of the permanence periods. The framework for the issuance of carbon maintenance obligations helps ensure risks to integrity of crediting can be addressed.

15. Why are both the permanence period discount number and the risk of reversal buffer being set at zero in the legislative rules but reapplied through the determination?

The permanence period discount number and risk of reversal buffer in the CFI Act (s16) apply to all credits issued for a sequestration offsets project, including any related to emissions avoidance. This would unfairly apply discounts to credits for avoided emissions (issued under the sequestration and emissions avoidance method) which are not applied to emissions avoidance projects. The 2018 method applies an appropriate discount to only the sequestration credits. The legislative rules set the discounts to zero so that when they are re-applied in the method they only affect the sequestration calculations and not the emissions avoidance calculations.

16. What are the ‘discounts’ in the 2018 sequestration method?

For 25-year permanence period projects, there are two 'discounts' to crediting. The first is a five per cent ‘risk of reversal buffer’ which applies to all sequestration projects in the ERF. The second is a 20 per cent ‘permanence discount’ which is applied to the sequestration abatement in the form of the ‘sequestration buffer’ in the method. For 100-year permanence period projects, a five per cent ‘risk of reversal buffer’ is applied to the sequestration abatement in the form of the ‘sequestration buffer’ in the method. So, for a 25-year project, the effective 'discount' is 25 per cent of sequestration credits. For a 100-year project, the discount is five per cent of sequestration credits.

The risk of reversal buffer is re-applied at the same level as the default value in the Act. The permanence discount for projects that select a 25-year permanence period is re-applied at the same level (20 per cent) as the default value in the Act. These discounts do not apply to the emissions avoidance abatement.

The end result is that a 100-year permanence period project receives 100 per cent of the emissions avoidance credits less the credits retained in the uncertainty buffer and 95 per cent of the sequestration credits under the method. A 25-year permanence period project will receive 100 per cent of the emissions avoidance credits less the credits retained in the uncertainty buffer and 75 per cent of the sequestration credits under the method.

Method	**Abatement type**	**Risk of Reversal Buffer**	**Permanence Discount**	**Sequestration Buffer (total discount)**	**Total credits generated that that will be received by the project**
Sequestration Project with **25 year Permanence Period**	Emissions Avoidance credits	0%	0%	N/A	100% (less any credits retained in the uncertainty buffer)
	Sequestration credits	5%	20%	25%	75%
Sequestration Project with **100 year Permanence Period**	Emissions Avoidance credits	0%	0%	N/A	100% (less any credits retained in the uncertainty buffer)
	Sequestration credits	5%	0%	5%	95%

17. Why is additional information on a project's intentions for the permanence period required?

All sequestration offsets projects must provide additional information on their intentions to ensure permanence at the declaration of their offsets project and in the first offsets reports submitted after the start of the 8th and 24th years of a sequestration offsets project (See the CFI Rule, s70(4A). It is important that all 100-year sequestration projects have a credible plan for how they will maintain carbon stores for the permanence period for the project.

18. Is it possible to extend the crediting period in a method?

A method can be varied by the Minister to extend the crediting period. If that happens, existing projects may be eligible to move to the varied method. A method may only have its crediting period extended once.

Under the CFI Act (s255A), the Emissions Reduction Assurance Committee is required to consider whether an extended crediting period is warranted before the first projects under a particular method finish their crediting period. This is done with a crediting period extension review which considers whether a method should be varied to extend the crediting period.

Whether crediting periods remain appropriate can also be considered in general regular reviews of methods by the Emissions Reduction Assurance Committee and when a method is remade after its 10 year expiry date.

19. How do the concepts of the 'crediting period' and the 'project year' interact?

Calculations in the methods rely on complete calendar year data. To effectively provide for calculations of abatement, the 'project year' starts on 1 January of the year the crediting period starts. Project years are complete calendar years.

Under the CFI Act (s69 (4)), the crediting period begins at either:

(a) the time the project is declared by the Regulator; or

(b) another date up to 18 months later at the discretion of the proponent.

This means that the first project year for a project can start earlier than the crediting period starts. For example, a project with its crediting period starting 1 April 2020 would have its first 'project year' relevant to the calculations as 1 January 2020 to 31 December 2020.

The concept of the project year does not allow more than 25 years of crediting, as no credits would be issued for the last incomplete calendar year which is part of the crediting period.

More guidance is available from the Clean Energy Regulator.

Transferring existing projects to a 2018 method

20. Can existing 'avoidance' projects move to the 2018 'sequestration' determination?

Yes. The method and changes to the CFI Rule in 2018 allow emissions avoidance projects to move to the sequestration determination.

The approach used to transfer whole projects or project areas will depend on whether planned amendments to the CFI Act are enacted. Before these changes are enacted, there is only one way to transfer a project. If the changes to the CFI Act are enacted, a second way to transfer is possible. Section 23 of the methods' Explanatory Statement provides examples and flow charts describing the different ways to move whole projects or project areas from an emissions avoidance project to a sequestration project.

At present the only process possible is for transferring projects to be *restarting transferring projects*. In this situation, these projects must be registered as 'new' sequestration offsets projects. The legislative rules provide a process to close down the old emissions avoidance offsets project and commence the sequestration project in consecutive years.

The permanence period for restarting transferring projects under this scenario will begin when credits are first issued for the sequestration project. The crediting period is calculated to continue from the earlier project (i.e. the balance of the original 25 years). An exception is if the project transfers (using a s22 application as per s28(1)(b) in the sequestration method) not more than five years after the determination commenced, in which case the new sequestration project will start with a 25 year crediting period which more closely matches the permanence period for the new sequestration project. The determination was made on 13 April 2018, registered on 1 May 2018, so it commenced on 2 May 2018. The five year 'window' will close on 2 May 2023.

If planned amendments to the CFI Act are enacted to correct unforeseen consequences of the 2018 savanna sequestration method, then existing emissions avoidance projects choosing to become a sequestration project can do so in one of two ways. They could move across as a restarting transferring project (described above), or they could become a continuing transferring project. For continuing transferring projects, the Regulator would approve the application of the savanna sequestration determination to the original project, under section 130 of the Act.

The crediting period for continuing transferring projects would continue, and the permanence period would begin when credits were first issued to the savanna project under an earlier determination.

21. Can there be a time gap between transferring a project from an earlier method and commencing under a 2018 method?

No. Calculations in the method rely on continuity of accounting for abatement from one project year (calendar year) to the next. Provisions in the CFI Rule (s30A and 30B) ensure that the final year of a project under an earlier method must be the calendar year immediately prior to the first project year under the new method.

22. What is a restarting transferring project?

Under both 2018 savanna determinations, a project area can be moved from one project to a different project. Such a project area is a *transferring project area.*

A *transferring project area* could be moved from an emissions avoidance project to a sequestration project (or it could also be moved from one sequestration project to another, or from one emissions avoidance project to another).

If a new project, when it is declared, contains a *transferring project area*, then the project is a *restarting transferring project*. Such a project would have a new crediting period.

23. For restarting transferring projects, why does the revocation of the current project need to occur under s 30A of the rules?

The legislative rules set up a process to ensure the continued reporting, crediting and accounting of emissions from the project as one project is revoked and the other begins. Without this continuity of accounting and reporting, the integrity of the crediting could be compromised by activities in the project area when the project was not subject to scheme obligations.

24. Do proponents of transferring projects need to re-do their vegetation fuel type maps?

No. The determinations allow existing vegetation fuel maps to be used. If new project areas are added at the time of project transfer, then new vegetation maps are required for those project areas.

25. If I transfer my savanna project to one of the 2018 methods, does my baseline reset?

No — existing projects or project areas that transfer to a new method keep their original baselines. This holds no matter when a project or project area transfers.

26. What if I transfer my project to the 2018 Emissions Avoidance method, then sub-divide my project?

The different project areas keep their original baselines, as long as they were part of the previous project.

It is possible for a project on a 2018 method to later add new project areas, or project areas from another project. In that case, the 'consolidated project' could then include project areas with different baseline periods - because each project area retains its original baseline.

27. What is the ‘5-year transfer window’ and how does it affect the crediting period for existing projects moving to a 2018 savanna method?

If a project applies to transfer to either of the 2018 methods within 5 years of the 2018 method commencing (i.e. on or before 2 May 2023) the project effectively gets to restart the 25 year crediting period. If a project applies to transfer after the 5 year window (on or after 3 May 2023), then the project will see out the remainder of the transferring project's existing crediting period. In both scenarios the project keeps the original baseline.

See also: *Transferring your project to the 2018 savanna fire management methods* on the Clean Energy Regulators' website.

Eligible interest holder consents and legal rights

28. What are the requirements around eligible interest holder consents for savanna projects?

The Clean Energy Regulator has published guidance on eligible interest holder consent, legal right and native title interactions. Guidance can be accessed at the following sites:

Legal Right

Native Title

Eligible Interest Holder Consent

29. Why are new eligible interest holder consents required for projects transferring to the 2018 savanna sequestration method?

For sequestration offsets projects it is important all persons with an eligible interest in a project consent to the project going ahead and are aware of the potential impact of the permanence obligations and any carbon maintenance obligation on the land.

If consents had been obtained for carrying out an emissions avoidance offsets project, this is not enough evidence that all eligible interest holders consent to the potential permanence obligations in relation to the land. This is because emissions avoidance projects are not subject to permanence obligations. Therefore, new consents specific to the sequestration offsets project and relevant permanence obligations will be required.

30. Why is it required to obtain all eligible interest holder consents before a transferring project can be declared?

The provisions around transferring projects, including exceptions to the ‘newness requirement’, are designed to guarantee continuity of crediting and accounting for fire management. It is important there is no gap between the end of one project and the commencement of the new project, which could undermine the long term integrity of the calculations.

When a project transfers and becomes a restarting transferring project, the previous project is revoked. The provisions then also seek to avoid perverse consequences, in particular the situation where a project is transferred conditionally (subject to eligible interest holder consent), but then is unable to obtain such consents. In such a case, the original project would have been revoked, and so the new conditional project could not revert back to be under its original method and the project could not continue. Nor could any savanna fire management project ever occur on the same area of land (due to the additionality rules - the newness requirement). There is no ability for such projects to undo the revocation of their earlier emissions avoidance offsets project or be credited for the years they were under the sequestration offsets project. Savanna projects are not disadvantaged by this rule because the activity can be credited as an emissions avoidance activity before it moves to sequestration (an option not available to other sequestration projects).

Updates process

31. What is the process for updates to be made to material external to the 2018 savanna determinations?

When the 2018 methods and the savanna technical guidance document were developed, feedback from the savanna industry around how external material might be updated was listened to. Requirements around how such documents must be updated were incorporated within the methods and also in the *Policy statement: updates to subsidiary material*. For material changes, the Department will consider robustness of science, any potential impact on the offsets integrity standards and the potential impact on project proponents. The Department will consult widely, including seeking advice from the public, the Clean Energy Regulator and the Emissions Reduction Assurance Committee. This is a very similar process to that for making a whole new method.

32. How can future scientific research be incorporated into the savanna methods?

A savanna carbon farming roadmap is being developed that will help inform future developments of savanna fire management. It might also help identify where knowledge gaps and uncertainties currently exist in the savanna science informing the ERF methods. The aim of the roadmap is to align research outcomes so they can inform future method updates and development.

The nature and scope of updated scientific research will help determine how the research might be incorporated into the savanna methods. Updates or broader scope or nature are more likely to require a variation or new methods. Updates with smaller scope or nature may be able to be incorporated through updates to the *savanna technical guidance document*.

Weeds

33. What is a relevant weed species?

Only weeds which are defined as *relevant weed species* in the savanna technical guidance document are considered to be *relevant weed species*. At present, only gamba grass is listed as a relevant weed. Other weed species may possibly be added in the future following further research, consultation, review and updates to the *savanna technical guidance document*.

Fires in relevant weeds behave differently to fires in vegetation fuel types defined in the methods. Fires in relevant weeds release more greenhouse gases and remove more carbon stocks than estimated by the methods. Therefore it is not conservative to include areas containing relevant weeds in areas used to estimate abatement. Otherwise the methods would likely be inconsistent with the offsets integrity standards.

34. What do I have to do if weeds are found in my project area?

Regardless of Emissions Reduction Fund requirements, all project proponents are required to follow relevant state or territory weeds legislation. Projects applying one of the 2018 savanna methods will also need to take action to address the weeds or remove the weed infested land from the project area.

35. I have a project under a previous savanna method. I know there are parts of the project area that are infested with gamba grass. Can my project continue?

Yes. The 2013 and 2015 savanna fire burning methods are silent on gamba grass. Note that state or territory legislation may require landowners to control or eradicate gamba grass.

36. Can I transfer my project which has a known infestation of gamba grass to one of the 2018 methods?

The 2018 methods do not allow gamba grass infested areas to be included in the project area. Nevertheless, there are a couple of different ways that projects can transfer.

The simplest and, where it is possible, the better way would be to eradicate gamba grass from the project area before transferring to the 2018 method. If there is no gamba grass present, then this is not a limitation on transferring to a 2018 method.

The 2018 methods also allow projects with known gamba grass areas to transfer to a 2018 method. But the project must then either eradicate the gamba grass or sub-divide the project area and remove the gamba infested areas from the project - all prior to the end of the first reporting period under the new project.

37. If I have transferred a project to a 2018 method, and sometime later found that gamba grass is present, what do I have to do?

For the project to remain eligible, the gamba grass must be removed. It could be eradicated before the end of the next reporting period and the project could continue. Or, if (for example) it proves impossible to eradicate the gamba infestation, the project area could be sub-divided, and the infested sub-divided project area/s removed from the project. In this way the project could continue, but with a somewhat smaller project area.

38. I have a project under a 2018 method. I did have a gamba infested area which I had to remove from the project area. I have now eradicated the gamba grass permanently. Can I add the removed project area back in to my project?

No. Gamba grass is known to burn with many times the intensity of native grasses. The conservative assumption is that if it was present and then eradicated, the vegetation type will likely have been substantially altered. Furthermore, vegetation that is gamba infested, or had been gamba infested, has not been parameterised for carbon abatement and so cannot be included in carbon abatement calculations.

39. The 2018 methods and the savanna technical guidance document talk about monitoring weeds. What does this mean for my project?

If a project is under an earlier method, there is no requirement to monitor for weeds. The guidance document only applies to the 2018 methods.

Under the 2018 methods, projects must exclude *relevant* weeds (i.e. gamba grass) and also monitor for gamba grass at regular intervals throughout the project - as specified in the *savanna technical guidance document*. That document notes that monitoring for weeds is only required if and when an approach to monitoring is published in the *savanna technical guidance document*. At present, there is no approach specified, so monitoring is not formally required at this time.

However, projects should note that the requirement to exclude weed infested (gamba grass) project areas, remains, so monitoring is strongly advised.

Research is underway to develop a remote-sensing approach to monitoring for gamba grass. Should such an approach be feasible, it is likely some years into the future before it could or would be incorporated in the *savanna technical guidance document*, following extensive consultation and the process outlined in the policy for updating external material.

40. What monitoring methodology will be developed gamba grass? Will it be 'adaptable monitoring'? What thresholds will there be for presence/absence or material impact of gamba?

There is an active research project being undertaken through the National Environmental Science Program: ‘Evaluation of satellite remote sensing pathways for mapping and monitoring of gamba grass for the Savanna Fire Management Methodology’. An outcome of this research may be a recommended approach to monitoring gamba grass distribution at a project level through remote sensing.

If a monitoring approach is defined in the *savanna technical guidance document*, it would follow consultation with the savanna carbon farming community, and would consider matters such as gamba grass presence thresholds and other monitoring aspects.

SavBAT3

41. Do the hypothetical abatement outputs in SavBAT3 for sequestration projects incorporate the sequestration buffer?

No. Users of the Hypothetical Abatement Tool in SavBAT3 for 25-year sequestration projects should reduce the hypothetical amount for sequestration by 25%.

SavBAT abatement reports incorporate permanence discounts and risk of reversal buffer, however the hypothetical forecast tool does not include these (for some complicated and technical reasons). The Department is considering improving functionality aspects of SavBAT3. We have included a clarifier in the hypothetical forecast tool that any discounts (e.g. 25% deduction) would need to be included by a person using SavBAT on top of the amount shown for the given hypothetical year.

42. Can the SavBAT3 hypothetical forecasting tool be improved (to allow for better scenario-planning)?

During development of SavBAT3, we considered the value and relevance of the hypothetical forecasting tool. The hypothetical forecast feature was maintained in SavBAT3 in response to stakeholder interest. However, it does not (and cannot) extend beyond a single hypothetical year due to the uncertainty around project-level assumptions from year to year. Note that the role of Government in this regard is to monitor and report, not to provide business advice for project viability.

The primary purpose of SavBAT3 remains as a project reporting tool to make using the savanna fire management methods more user-friendly.

Fuel loads

43. What does seasonality in fine fuels mean?

'Fuel' simply refers to the burnable biomass in an area. 'Fine' is a size class used by the science and contrasts with 'coarse' (larger sticks and branches) and 'heavy' (large branches, dead tree trunks etc.). *Fine fuels* are a short-hand way to refer to grass, leaves and twigs. *Fine fuel load* refers to the amount of fine fuel that is present under defined circumstances (type of vegetation, season, time since that area was last burnt, etc.).

Growth (and death) of grasses, leaves and twigs is affected by natural cycles of rain and temperature and other environmental factors. For example, there may be strong growth of grasses and tree leaves during the wet season and very early dry season, but as the dry season progresses, leaves may fall and grasses may dry out - that is, the fine fuel load increases. The difference in the accumulation of the fine fuels between the late and early dry seasons contributes to the calculation of abatement. For example, in the absence of a fire in an area, there might be a higher fine fuel load expected in the late dry season than the early dry season. That means that a fire in the late dry season would be expected to have higher greenhouse emissions than a fire in the same area in the early dry season - because there is more fuel available to burn. This difference underpins the whole notion of generating abatement by using savanna fire abatement.

44. How were seasonal fine fuel loads worked out in the 2015 ERF savanna method?

The 2015 ERF savanna method included a table of values for the fine fuel loads for each vegetation fuel type, and for both seasons (early dry season and late dry season). These numbers were used in the calculation of abatement for projects. If a fire was in the late dry season (LDS), the relevant fine fuel load number was used. If a fire was in the early dry season (EDS), then a different (lower) number would be used. Putting all that together, if a project had less fire in the LDS during a project year, compared with their baseline period, they could generally expect to earn carbon credits.

Seasonal fine fuel accumulation tables were first introduced in the 2015 ERF savanna method. At the time, the approach used to determine seasonal effects on fine fuel loads identified the best fit Olson curves through the field observations of fine fuel loads, with the assumption that there was no fuel remaining immediately after each fire. The Olson curve is an internationally accepted relationship between fuel accumulation and decomposition.

Field data was obtained from research plots predominantly located in the Northern Territory. For each sample, the weight of fuel loads, the vegetation fuel type and the years since the most recent fire were recorded. Samples were mainly collected in the early dry season (EDS), so analysis assumed the average of all fuel load samples represented that for the early dry season.

The late dry season (LDS) fuel loads were estimated as the EDS fuel load plus a seasonal fuel load difference. A study in annually burnt plots in open forests (hOFM) at Kapalga, Kakadu National Park, NT demonstrated a 1.7 $t.ha^{-1}$ difference in fine fuel load samples collected in early June (assumed to represent fuels in the EDS) and late September (assumed to represent fuel loads in the LDS).

In the absence of other quantifiable data demonstrating seasonal differences in fine fuel loads at this time, the 2015 ERF method applied this difference to all vegetation fuel types in the high rainfall zone and at all times since fire. A similar approach was used to derive a single seasonal difference for all low rainfall vegetation fuel types and all times since fire (Yates et al. 2015; Cuff and Brocklehurst 2015)[1].

45. How were the 2018 methods' seasonal fine fuel load values worked out?

The fine fuel load values used in the 2018 methods were based on the same research data as used in the earlier methods. The earlier scientific work was extended by also using other environmental information to help model how much fine fuel could be expected to be present before a fire even started. This is related to how long it was since a specific area was last burnt, as well as the patchiness of the fire and the amount of biomass that was left behind after the last fire.

Emissions estimates are derived from the amount of fuel present at the time of burning and various burning parameters (i.e. the burning efficiency, burn patchiness, emissions factor, carbon content and nitrogen to carbon ratio). Savanna fires mostly burn fine fuels, with greater amounts of other fuel classes burnt as fire intensities increase.

Fine fuels are composed of tree litter and grass litter. The amount of tree litter and grass litter varies due to differences in (i) canopy cover and tree and grass growth dynamics between vegetation fuel types, and (ii) monthly accumulation rates. Fine fuel loads also increase with greater time since the most recent fire (years since last burnt). Accounting for all the variability in fine fuel loads improves the accuracy of estimates of emissions abatement.

In the 2018 methods, fine fuel loads for each fire season and each time since fire were derived using the Olson model and the same empirical data used for the 2015 ERF method. However, for each vegetation fuel type, relationships between soil types and rainfall determined the total basal area of trees, which in turn was used to determine the monthly amount of tree litter fall. Known tree litter to grass ratios and grass litter accumulation and decomposition dynamics were used to estimate monthly grass fuel loads. The model was also used to determine the amount of fine fuel remaining after each fire due to fire patchiness and incomplete combustion. This extended the work that contributed to the 2015 method by incorporating known ecological processes in the derivation of the Olson curves for fuel accumulation.

Estimating fine fuel loads at the time of fire improves the estimate of fire emissions. Twenty-eight years of monthly fire scar data for northern Australia was used to determine, for each vegetation fuel type, the proportion of the area burnt in each fire season that burnt in each month. This analysis determined that most fire activity was in June and July in the EDS; while in the LDS fires burnt mainly in August and September. Figure 1 (bottom panel) shows the proportion of seasonal area burnt that burns in each month. The fire activity for each month in the early dry season was calculated as the fire activity in each month divided by the total fire activity in the early dry season, so that the values sum to one. The calculations were derived similarly for the late dry season. The data in Figure 1 does not imply that there is less burning in August than July, rather, that July has the peak fire activity of the early dry season months

[1] Cuff N, Brocklehurst P (2015) Leaf and coarse fuel accumulation and relationships with vegetation attributes in 'evergreen' tropical eucalypt savannas. In 'Carbon management in northern Australian savannas.' pp. 133-167. (CSIRO Publishing: Collingwood)
Yates C, Russell-Smith J, Murphy BP, Desailly M, Evans J, Legge S, Lewis F, Lynch D, Edwards AC (2015) Fuel accumulation, consumption and fire patchiness in the lower rainfall savanna region. In 'Carbon accounting and savanna fire management.' (Eds BP Murphy, AC Edwards, M Meyer, J Russell-Smith.) pp. 115-132. (CSIRO Publishing: Clayton South, Victoria)

and September has the peak fire activity of the late dry season months. For the open forest vegetation type across northern Australia, 30.6% of all fires occur in the early dry season.

Figure 1 (top panel) illustrates the monthly fine fuel loads for high rainfall open forest. To estimate seasonal fuel loads that represent those at the time of fire, monthly fine fuel loads for each season were weighted by the proportion of fire activity (Figure 1 bottom panel). This means there is a greater contribution to the seasonal fine fuel load from fuel loads in those months with greater fire activity. The figure shows the seasonal fuel loads (horizontal lines) weighted by fire activity for each fire season in each year. Fuel loads peak in roughly the same months as peak fire activity. As the time since fire increases, there is a decline in the difference between the seasonal fine fuel loads.

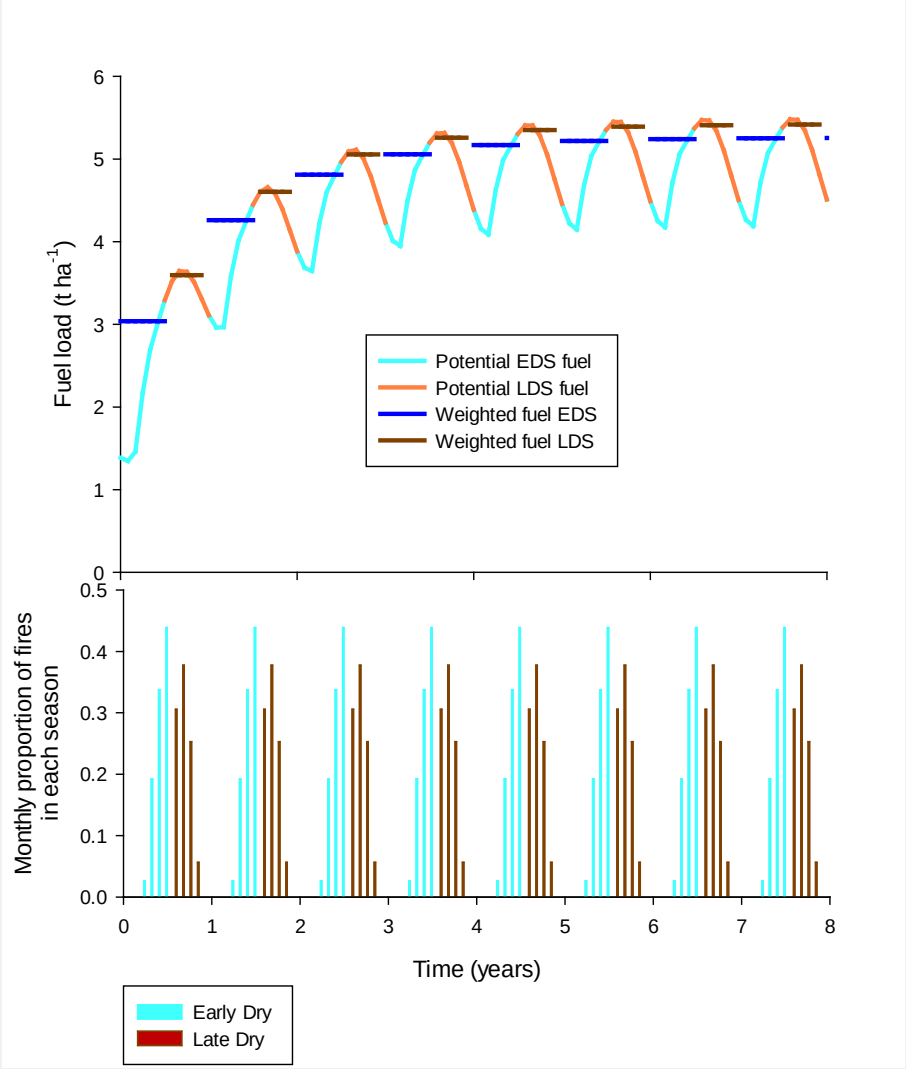

Figure 1: The monthly fuel loads (line in top panel) and the seasonal fuel loads for each year weighted by fire incidence (horizontal lines in top panel) for hOFM; and the proportion of seasonal area burnt that burns in each month (bottom panel).

46. How do the two approaches to accounting for fine fuel loads compare?

The 2018 methods' approach for including seasonality in fine fuels builds on the approach used in the 2015 method. The updated approach improves the estimates of seasonal fine fuel loads for each vegetation fuel type and time since fire. Even though the estimates made for the 2015 ERF method were based on the best available information at the time, they can no

longer be considered conservative. It is important that all estimates, assumptions and projections that contribute to the calculation of the net abatement amount are conservative, otherwise a method may not meet the Offsets Integrity Standards (some of the rules that govern methods).

The updated approach:

- Uses the same Olson fuel accumulation model and same data set that was used in the approach in the 2015 ERF method;
- Calculates fuel remaining immediately after fire to account for partial combustion and the patchiness of burnt areas. This is consistent with the inclusion of seasonal patchiness and burning efficiency in emissions calculations. The approach in the 2015 ERF method assumed no fuel remained after fire;
- Includes additional analysis to derive seasonal fuel loads from monthly fuel loads for each vegetation fuel type and time since fire. The analysis accounts for variations in total basal areas, litter and grass accumulation and decomposition rates, and tree litter to grass ratios. The 2015 ERF method assumed a single seasonal difference between EDS and LDS fine fuels for each rainfall zone and for all vegetation fuel types and times since fire within each rainfall zone. The seasonal difference in fine fuel loads observed at Kapalga is likely to over-estimate the average seasonal difference in high rainfall zones across northern Australia. This is because:
    - The productivity of the Kapalga site is above average;
    - Fine fuel loads in hOFM are one of the highest for high rainfall vegetation fuel types. There are measurable differences in the fine tree litter and grass litter ratio and fine fuel load dynamics between vegetation fuel types;
    - Fuel samples were collected toward the beginning and end of peak fire activity – early June for EDS fuels, and late September for LDS fuels. These were used to estimate the seasonal difference, and due to the timing of collection, are likely to over-estimate the difference in fuel loads for the time when fires occur (See Figures 1 and 2); and
    - Applying the seasonal fuel load difference observed in annually burnt plots will over-estimate the seasonal effect on fine fuel loads for subsequent years since last burnt (See Figure 2). This is because there is a decline in the amplitude between EDS and LDS fine fuel loads with increasing time since fire. The decline in amplitude is due to decomposition removing more of the fine fuel load with increasing time since fire, whereas annual litter fall rates remain constant with time. This results in decreasing maximum annual fuel loads with time.
- Weights monthly fine fuel loads by the monthly fire activity to estimate a seasonal fuel load representative of the time when fires occur. The approach used in the 2015 ERF method combined fine fuel loads measured in the field across all months in each fire season to estimate a seasonal fuel load. It did not weight fuel loads by fire activity.

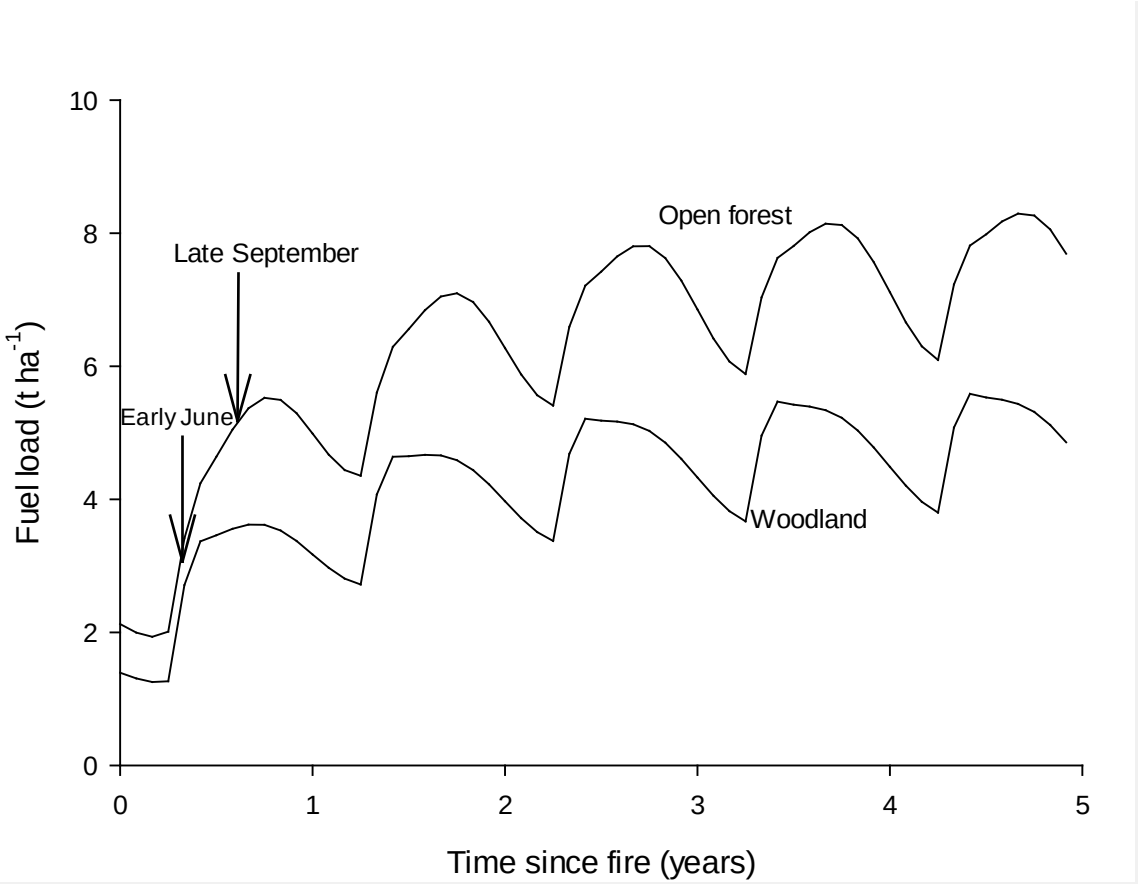

Figure 2: Modelled fuel accumulation after a fire in open forest savanna (hOFM – top line) and woodlands (lower line) at Kapalga. The time of field collection of EDS (early June) and LDS (late September) fuel load data from annually burnt plots is shown. This was used to derive the seasonal change values for the 2015 ERF method.

47. Do the seasonality fine fuel tables impact sequestration abatement estimates?

No. Fuel accumulation tables for fine fuels are only used to estimate the emissions resulting from each fire. Sequestration calculations only account for changes in coarse and heavy fuel loads.

48. What are the implications of the seasonal fine fuel loads on abatement calculations?

One implication is that the updated approach for estimating seasonal fine fuel loads results in different emissions abatement estimates compared to estimates using the 2015 ERF method. This might mean more abatement or less abatement for a project, but often means less abatement. It varies between projects, because of differences in the combination of vegetation fuel types present and the fire activity during the baseline and project periods (See example in Figure 3 below).

Abatement estimates using updated seasonal fine fuel loads are likely to be similar to abatement estimates calculated using fine fuel loads at an annual time step (See Figure 3). This is because the 2018 determinations use a dynamic grass fuel load, estimating seasonal grass fuels from monthly grass fuel dynamics. Due to its derivation, the previously constant grass factor used to calculate annual fine fuels in the earlier draft determinations results in annual fine fuel loads approximating the average of the EDS and LDS fine fuel loads.

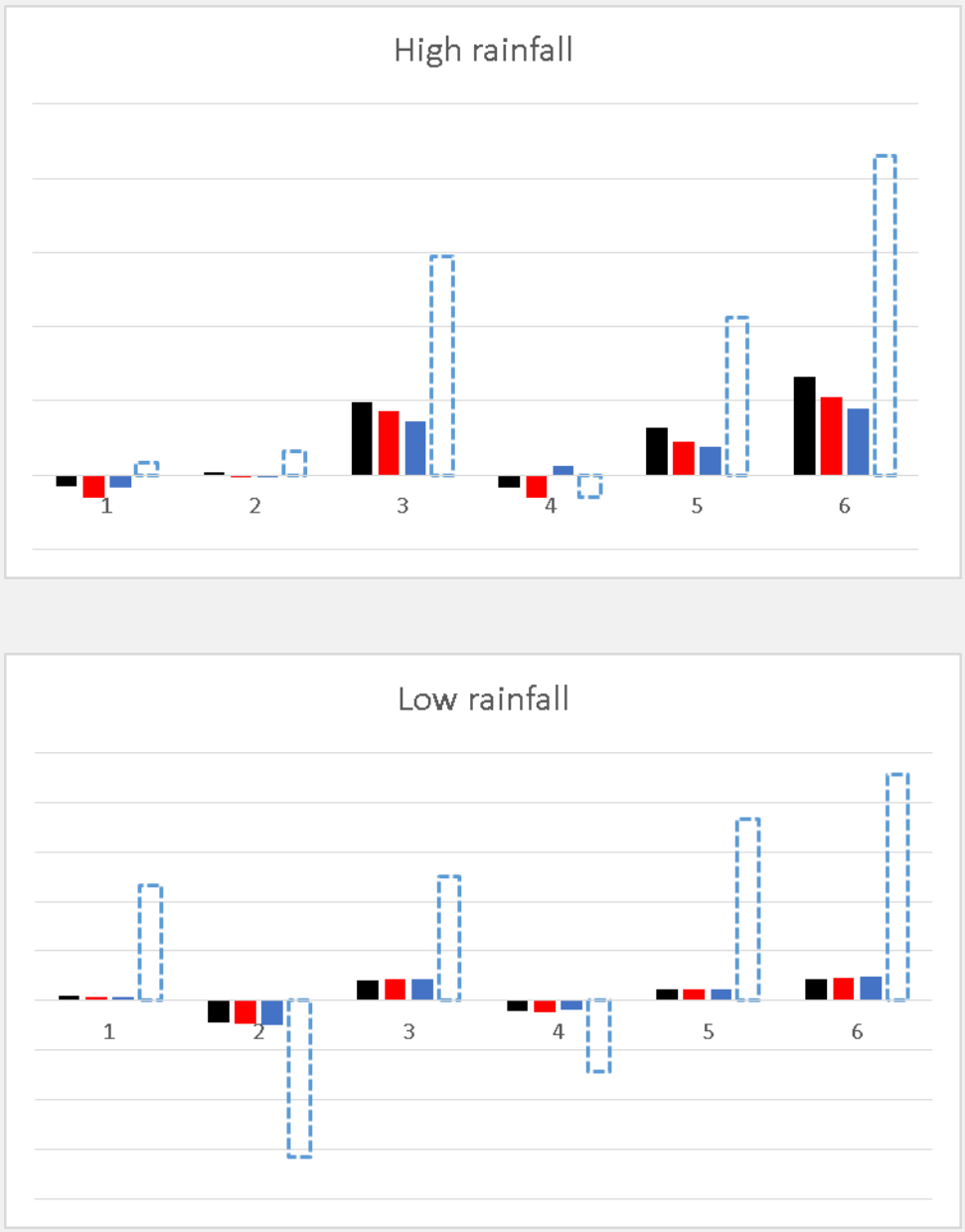

Figure 3: The annual abatement across six years resulting from emissions avoidance in a hypothetical project area in the high rainfall zone (panel 1) and the low rainfall zone (panel 2). Abatement from emissions avoidance estimated using the 2015 ERF determination are shown in black; Estimates using the annual fine fuel loads are shown in red; Estimates using the new seasonal fine fuel loads are shown in blue. Estimated abatement resulting from sequestration, that is additional to emissions avoidance abatement, is shown with the hashed bar.

49. Why is it not possible to use the same approach to derive seasonal fine fuel loads as used in the earlier savanna fire management determinations?

After the 2015 method was made, the way that Australia reports on emissions changed. Australia adopted the 2006 IPCC guidelines for full carbon accounting, which is a non-negotiable requirement for Australia's National Greenhouse Gas Inventory. The new approach to calculating both emissions and sequestration was developed in line with the new reporting in the National Inventory. The same approach to work out fuel loads was taken for all fuel size

classes because we know that the physical processes of accumulation and decomposition of fuel in savannas are the same regardless of the fuel size.

Not using the same approach to derive fuel loads across all fuel size classes for both emissions and sequestration would raise questions about the integrity of the method used in Australia's National Inventory Report. It could give the impression that the emissions and sequestration components are independent when they are not, and raise concerns the methods are being chosen to maximise the abatement results at the expense of accuracy. This would be the case regardless of whether the approach in the 2015 determination was used just to calculate fine fuel emissions or to calculate emissions from all fuel classes.

The 2015 savanna fire determination did not have to address this issue because it was developed in accordance with the partial carbon accounting provisions in the 1996 IPCC guidelines and does not account for sequestration in the dead organic matter.

50. Does the 2015 savanna method still meet the program's offsets integrity standards?

The 2015 savanna method was based on the best available science at the time, and when it was made it was considered to meet the offsets integrity standards.

After 2015, Australia's National Greenhouse Gas Inventory (NGGI) has updated the way it reports in line with international reporting rules, in particular to align with the 2006 IPCC guidelines for full carbon accounting. This meant some of the approaches under the 2015 savanna method would no longer be consistent with the NGGI. To remain consistent with the offsets integrity standards, the approach used to calculate abatement in the methods needed to be consistent with the National Inventory approach. The CFI Act allows projects to remain on varied or revoked methods for the duration of their crediting period.

See also: *Cook, G.D. and Meyer, C.P. Mick (2017) Seasonal variation in fine fuel accumulation in savannas. CSIRO, Australia*, also available as a link on the Department's website under 'Supporting documents' as 'Seasonal variation in fine fuel accumulation'.

An overview of the offsets integrity standards can be found on the Department's website here.

51. I have a project under a previous savanna method. Do I have to move to a 2018 savanna method if I want to continue my project?

No. There is no requirement for existing projects to transfer to one of the new methods. If they decide, existing projects can continue to operate on an earlier savanna method for the remainder of their crediting period.

Other general questions

52. Why are coarse and heavy fuel loads used for estimating emissions avoidance no longer taken from look up tables?

Estimates of abatement from emissions avoidance must reflect the fuel loads which are used to estimate abatement from sequestration in coarse and heavy fuels. Therefore, fuel loads for coarse and heavy fuel size classes are now derived using the same approach as that used to estimate sequestration abatement. This approach determines the annual fuel load based on the fire frequency and areas burnt in each fire season during the baseline period and the project calculation period.

53. Why is there now an eligibility requirement relating to bushfire legislation?

State and Territory bushfire legislation includes requirements to take steps that minimise the risk of bushfires. This includes that land managers, including savanna fire management projects, obtain fire permits from a relevant authority at certain times. A new rule makes clear that material non-compliance with the requirement to obtain permits over a reporting period may result in the Clean Energy Regulator withholding the issuance of credits. This provision is not aimed at inadvertent or trivial compliance issues, but non-compliance that is material to the community safety objectives of that legislation over the relevant reporting period. In particular, if there is a reasonable excuse why a permit was not obtained on a particular occasion, no one was successfully prosecuted for the breach and there is no history of non-compliance, the Regulator is able to issue credits.

54. Why can’t the same project be registered separately as an emissions avoidance offsets project and a sequestration offsets project?

The Act does not provide for, or 'contemplate', the same activity being declared twice as two separate eligible offsets projects on the same project area. When a project is declared as an ‘eligible offsets project’ under the Act it is then classified as either an emissions avoidance offset project or a sequestration offset project. This means that it is not possible for the same project to be registered under both methods.

55. Can a revoked project be unrevoked?

No. Once a project has been validly revoked that decision cannot be ‘unmade’.