Australian Government
Clean Energy Regulator

EMISSIONS REDUCTION FUND

Understanding your blue carbon project

Emissions Reduction Fund simple method guide for blue carbon projects registered under the *Carbon Credits (Carbon Farming Initiative —Tidal Restoration of Blue Carbon Ecosystems) Methodology Determination 2022*

Contents

Using This Guide

This document provides a step-by-step guide on how to plan, register, deliver and report on a blue carbon project under the *Carbon Credits (Carbon Farming Initiative – Tidal Restoration of Blue Carbon Ecosystems) Methodology Determination 2022* (the blue carbon method) – which is the legislative instrument that details the rules for how to run a blue carbon project. In addition to the legislative instrument itself and this simple method guide, further details on how to run a blue carbon project are included in:

- The Blue Carbon Method Supplement (the blue carbon supplement)
  - » This document contains technical requirements and recommendations which support particular aspects of the blue carbon method
- The Blue Carbon Accounting Model (BlueCAM)
  - » This is the tool used to calculate net abatement under the blue carbon method
- The BlueCAM Guidelines
  - » This document contains guidelines on entering data into BlueCAM and interpreting the results

General requirements for running Emissions Reduction Fund (ERF) projects are also included in:

- *The Carbon Credits (Carbon Farming Initiative) Act 2011* (the CFI Act)[1]
- *The Carbon Credits (Carbon Farming Initiative) Rule 2015* (the CFI Rule)[2]
- *The Carbon Credits (Carbon Farming Initiative) Regulations 2011* (the CFI Regulations)[3]

Introduction to the blue carbon method

This is the first blue carbon method under the ERF. 'Blue carbon ecosystems' is a term commonly used for coastal wetland and marine ecosystems that can sequester and store high amounts of organic carbon, and release very low amounts of greenhouse gases. In many locations across Australia, saltwater coastal wetlands have been drained or converted to freshwater wetlands through the installation of levees, drains, bunds, or tidal gates that prevent tidal inundation.

In the new blue carbon ERF method, the project activity will be to reintroduce tidal flows to an area of land through the removal or modification of a sea wall, bund, drain, or other type of tidal flow restriction mechanism such as a tidal gate. This results in the rewetting of previously completely or partially drained coastal wetland ecosystems and the conversion of freshwater wetlands to brackish or saline wetlands, through permanent or seasonal inundation of the land with saline or brackish water.

The method enables Australian Carbon Credit Units (carbon credits) to be earned for the establishment of coastal wetland ecosystems (that may be vegetated or unvegetated) that occurs as a result of project activities. There are three components within coastal wetland ecosystems that contribute to carbon abatement for a blue carbon project. These include:

- Soil carbon;
- Carbon stored in above and below ground vegetation; and

[1] https://www.legislation.gov.au/Details/C2020C00281
[2] https://www.legislation.gov.au/Details/F2021C01069
[3] https://www.legislation.gov.au/Details/F2020C00389

- Emissions avoidance from introducing tidal flow.

The method covers the increase in soil carbon that occurs as a result of vertical accretion. Vertical accretion is the increase of organic carbon-rich soil that occurs as organic matter accumulates in coastal wetland ecosystems over time. The method does not account for changes in soil carbon *concentration* over time compared with the baseline conditions (prior to a blue carbon project commencing).

The method covers the establishment of vegetated coastal ecosystems including supratidal forests (e.g. swamp mahogany, paperbark and casuarina), saltmarshes, mangroves, sparsely vegetated saltmarshes (salt flats), and seagrass. Under this method, vegetation includes both vegetation below and above ground including leaves, roots, tree branches, bark and trunks. The establishment of unvegetated coastal wetland ecosystems such as mudflats are also covered by this method (referred to as 'other use land') if they result in avoided emissions compared with the baseline land type. However, for these ecosystems, the method does not account for the carbon sequestered in soils as this is not presently included in Australia's Greenhouse Accounts.

The method also covers the significant emissions avoidance that results from introducing tidal flows to coastal wetland ecosystems that have been drained or converted to freshwater wetlands. Coastal wetlands that have been converted from saltwater to freshwater environments emit high amounts of greenhouse gases, in particular methane. This is caused by the anaerobic decomposition of organic material stored in the soils of the blue carbon wetlands. Permitting tidal flows to return to coastal wetland ecosystems that were converted to freshwater systems, results in a significant reduction in methane emissions as microbial methane production is limited in saltwater conditions, in comparison to freshwater conditions.

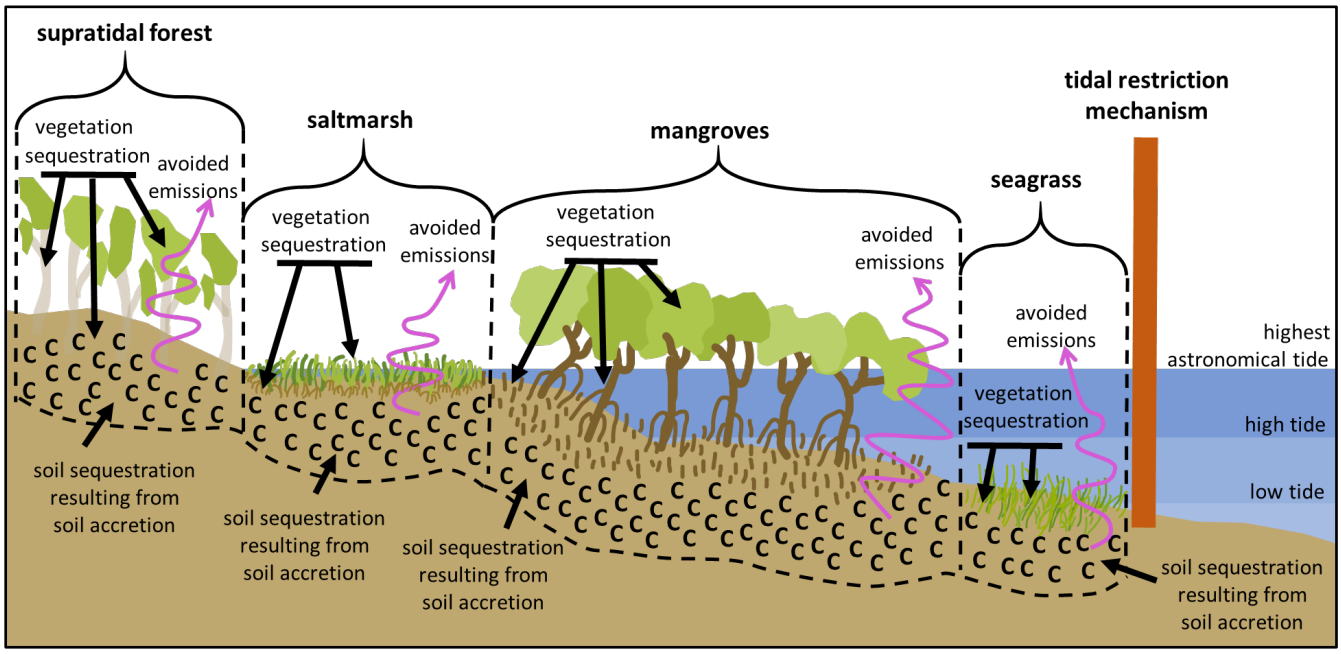

Figure 1: Carbon sequestration and emissions avoidance covered by the blue carbon method (illustrative only)

The Blue Carbon Accounting Model (BlueCAM)

BlueCAM has been developed alongside the blue carbon method and is used to calculate the net carbon abatement from each of the soil and vegetation sequestration and emissions avoidance components of a project. Project proponents are not required to conduct sampling. The model-only approach is intended to simplify the requirements of the method and reduce costs associated with sampling.

BlueCAM was developed through a collaboration among 13 of Australia's coastal wetland scientists and experts from universities across Australia. BlueCAM is based on regionally differentiated parameters

underpinned by the latest empirical science and data. The agency has published a technical overview which outlines the approach used by BlueCAM to estimate carbon abatement, including the rationale behind the selection of parameters and input data.

BlueCAM may be updated over time as new data becomes available to ensure the model provides accurate estimates of abatement. Project proponents will need to use the most recent version of BlueCAM to calculate their net abatement amount.

Participating in the ERF

The ERF offers landholders, communities, and businesses the opportunity to run projects in Australia that reduce or remove greenhouse gas emissions from the atmosphere.

In running a project, proponents earn carbon credits and can sell them to the Australian Government or to companies and other private buyers. Each carbon credit represents one tonne of carbon dioxide equivalent emissions stored or avoided (noting that legislated discounts apply to abatement from projects that store carbon).

How participating in the ERF Works

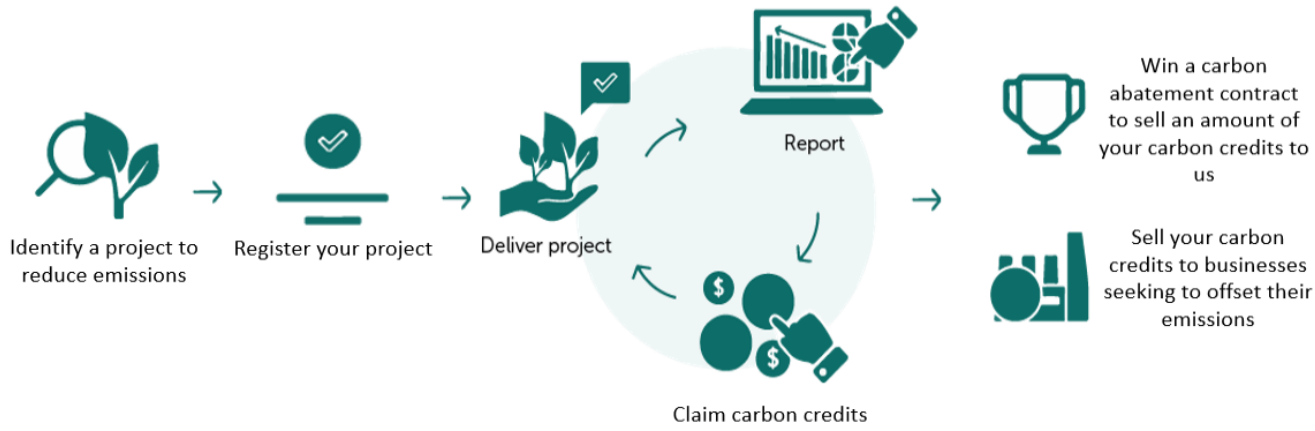

Figure 2: Emissions Reduction Fund project lifecycle

There are 4 general steps in running a project and participating in the ERF:

1. Plan your project, ensure the project is eligible, and that you hold legal right for the duration of the project.
2. Register your project with the Clean Energy Regulator.
3. Run your project and deliver on project activities.

4. Report on your project and claim carbon credits. These can be sold to the Australian Government or other buyers. Visit our website[4] for more information on selling carbon credits.

There are a range of factors which may influence your decision to participate in the ERF and invest in a blue carbon project. These factors may include the cost of undertaking the activity (including the revenue foregone from changed land use), the price of carbon credits, and the range of co-benefits that can arise from a blue carbon project (which may influence investment decisions and could result in a premium price being paid for the carbon credits).

Ultimately, the decision to invest in a blue carbon project is a commercial decision made on a case-by-case basis. The agency recommends you seek independent technical, legal, audit and/or financial advice regarding your specific circumstances and requirements.

Blue carbon project lifecycle

The key steps involved in running a blue carbon project are outlined below. Further information about each of these steps is detailed throughout this simple method guide.

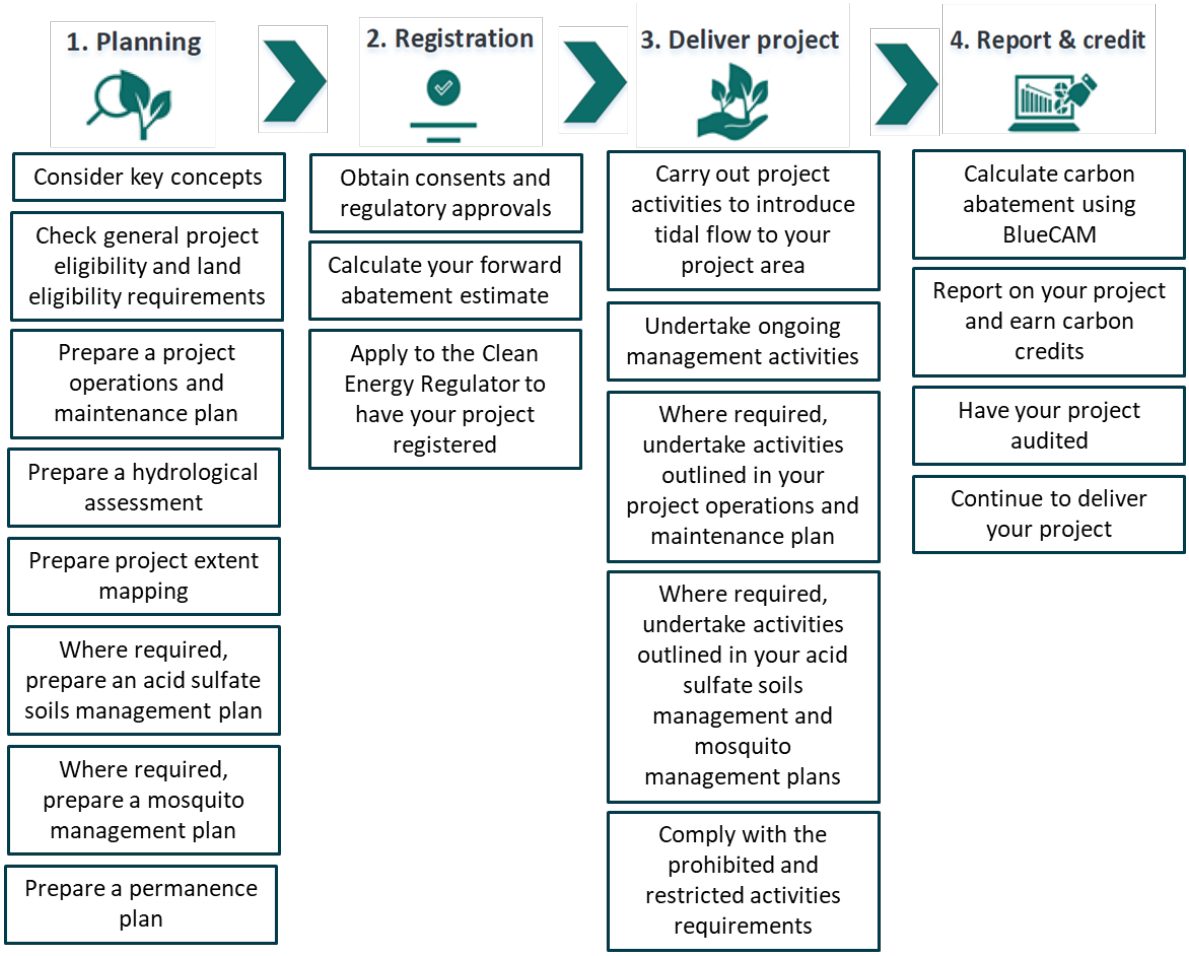

Figure 3: Key steps involved in a blue carbon project (illustrative only)

[4] http://www.cleanenergyregulator.gov.au/ERF/Want-to-participate-in-the-Emissions-Reduction-Fund/Step-2-Contracts-and-auctions/bidding-at-an-auction

Step 1: Planning your blue carbon project

Planning a blue carbon project is not be a linear process in decision making. There are a number of key concepts, eligibility requirements and mapping requirements that are interdependent and will influence decision making on an ongoing basis. Figure 5 (on the next page) details a high-level example of the decision-making process in planning a blue carbon project. Each of the concepts and terms used in the diagram are explained in this guide.

As you are planning your blue carbon project, you may need to repeat some key planning steps if decisions about your project change. For example:

- You might need to amend your project operations, maintenance plan and hydrological assessment to be able to obtain the required approvals.
- If you were originally planning to register your project with a 100-year permanence period, however you are unable to include at least 80% of land projected to be impacted by your project activities in your project area because insufficient landholders of the land wish to participate in the project, you may decide to choose a 25-year permanence period instead (noting the discounting arrangements for 100-year permanence period projects that include less than 80% of land projected to be impacted). In doing so, you will be required to revise your project operations and maintenance plan and hydrological assessment to reflect these changes. Note you are unable to change your permanence period once your project has been registered with the agency.

If you wish to make changes after your project is registered (e.g. changing your project activity or your project area) or particular circumstances arise (e.g. you become aware of a material error in your initial planning or infrastructure used by your project fails to operate as you intended it to), you may also be required to repeat some of your initial planning work.

Figure 4: A young mangrove growing in the seagrass beds of Jawbone Sanctuary in Victoria, Australia

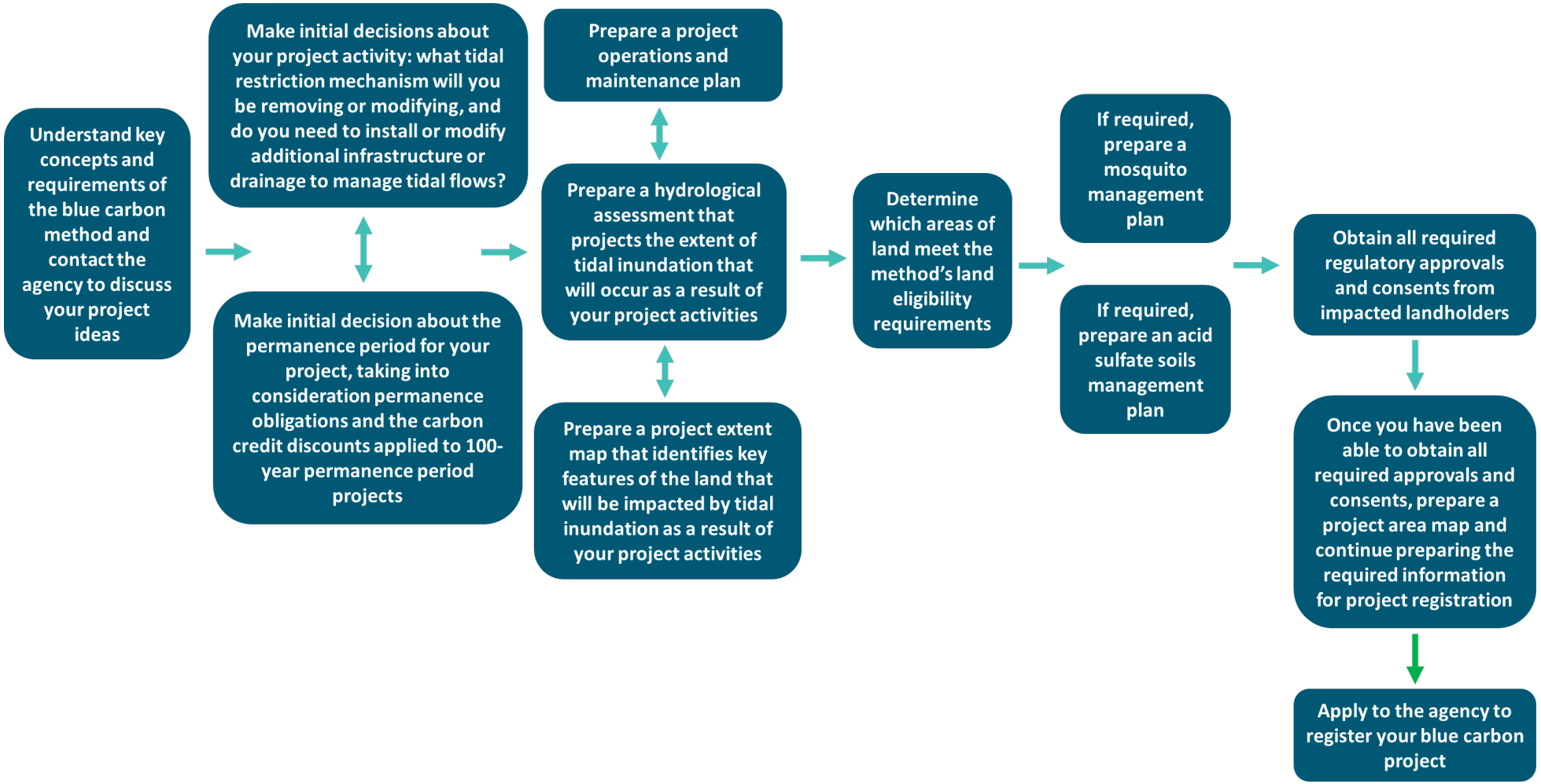

Figure 5: Planning a blue carbon project (illustrative only)

1.1 Key concepts to consider

Project activities

The activity covered by the blue carbon method is the removal or modification of a tidal restriction mechanism to allow the introduction of tidal flow to an area to support the establishment of coastal wetland ecosystems.

As part of your project activities, you may also be required to remove, modify, install or construct new infrastructure or draining infrastructure, or use existing infrastructure or drainage infrastructure, to manage the extent of tidal inundation that occurs as a result of modifying or removing a tidal restriction mechanism.

One or more of supratidal forests, saltmarshes, salt flats, mangroves and seagrass will naturally establish in suitable locations following the removal or modification of the tidal flow restriction mechanism. Seeding or planting may increase the speed of establishment in locations where a natural seed bank no longer exists within the soils or adjacent areas of the site, and natural dispersal is expected to be limited.

A registered blue carbon project must maintain tidal flow to the project area throughout the project permanence period (see 1.1 – *permanence period obligations*) to sequester and maintain the carbon stored within the vegetation and soils.

Carbon abatement

As described earlier, a blue carbon project achieves carbon abatement by increasing the carbon stored in soil and vegetation, and in avoiding emissions from soils as they are rewetted, or from freshwater ponds being returned to saline wetlands. Appendix 1 details the emissions covered by the blue carbon method including those associated with soil sequestration, vegetation sequestration and emissions avoided.

Carbon abatement is calculated by comparing what land type exists in the project area at the start and end of each reporting period – for example, where land that is pasture or sugarcane fields at the start of a reporting period transitions into a coastal wetland ecosystem type, such as supratidal forest or saltmarsh by the end of a reporting period. Where there has been a transition in the land type, BlueCAM applies vegetation and soil sequestration rates to estimate carbon abatement.

Successful projects under the blue carbon method will also cause a reduction in the amount of greenhouse gas emissions being released from soils due to the introduction of tidal flows. BlueCAM estimates the carbon abatement that occurs as a result of reduced emissions over the crediting period compared to the baseline level. The baseline level in this case reflects the amount of carbon that would have been emitted from the soil if tidal flows had not been introduced. The baseline level of emissions is determined according to the land type that is present before project activities have been carried out (for example, pasture or sugarcane fields).

Any emissions produced as a result of your project are also taken into account in the net abatement calculations. These are referred to as *project emissions* and include emissions from fuel used during the carrying out of project activities and emissions from soil disturbance due to excavation activities.

Crediting period

The crediting period is the period during which you can earn carbon credits by reporting on your project. The crediting period for blue carbon projects is 25 years and begins at the date that the project is declared as a registered ERF project.

You can apply to the agency to defer the start of the crediting period by up to 18 months after the project is registered, so long as this is done before or together with the first offsets report for the project (CFI Act s 69 (4-5)).

Permanence period obligations

Sequestered carbon can be released back into the atmosphere by man-made or natural events, thereby reversing the environmental benefit of the blue carbon project. Sequestration is regarded as having a 'permanent' benefit to the atmosphere if it is maintained for 100 years. Because of this, all sequestration projects in the ERF are subject to permanence obligations that run with the land.

When registering a blue carbon project, you can choose either a 25 or 100-year permanence period during which the carbon stored by the coastal wetland ecosystems that have established because of your project, must be maintained. You may have to return some or all of the carbon credits you have earned for sequestration abatement if, before your permanence period ends, your project ceases or carbon stores are reversed. Further information about permanence obligations can be reviewed on our website[5].

The permanence period begins when your project first receives carbon credits, or from when an area of land is added to your project. The first offsets report for your project is due, at the latest, 6 months after the end of the first reporting period, and the first reporting period can be up to 5 years after project registration. This means that for some blue carbon projects, the permanence period will not start until at least 5 years from the project start date (after the report is assessed by the agency and carbon credits are issued). For projects that apply to defer the crediting period start date by a maximum of 18 months, CFI Act s 69 (4-5), the permanence period could start 7 years after project registration (or later if no credits are issued).

Key factors to consider when choosing a permanence period are the obligations you will have to fulfill to maintain the carbon stored in your project until the end of your chosen permanence period, and the carbon credit discounts that will be applied to your project depending on your chosen permanence period (See 1.1 – *carbon credit discounts applied to blue carbon projects* for further information).

Before beginning the project activity, blue carbon projects require a hydrological assessment to be undertaken in accordance with the requirements of the Supplement (see 1.6 – *hydrological assessment*). The hydrological assessment will identify the extent of land that will be impacted by the removal of the tidal restriction mechanism and likely support the establishment of coastal wetland ecosystems through to the end of the 25-year or 100-year permanence period. The results of the hydrological assessment can help you determine the most appropriate permanence period (25 or 100 years) for your project.

Permanence plans

In accordance with the requirements of the CFI Rule, you will need to provide an explanation as to how you will retain carbon stored in the vegetation and soils over the duration of the permanence period. This is called a *permanence plan* and must be provided at project registration and as part of the first offsets report following years 8 and 24 of the crediting period. Your permanence plan will need to detail the actions you will take to avoid and reduce potential loss of credited carbon in your project area, which may include actions related to fire hazard reduction or weed or feral animal management.

[5] http://www.cleanenergyregulator.gov.au/ERF/Choosing-a-project-type/Opportunities-for-the-land-sector/Permanence-obligations

Considerations in running an ERF project with carbon sequestration and emissions avoidance components

Although they contain both sequestration and emissions avoidance components, projects under the blue carbon method are classified as sequestration offsets projects under the CFI Act. A key administrative challenge is the CFI Act does not distinguish between the number of carbon credits issued for the sequestration components of the project and the number of carbon credits issued for the emissions avoidance components of the project. This means that carbon credits issued for emissions avoidance are also subject to relinquishment requirements (meaning equivalent carbon credits need to be returned to the agency) if projects are revoked, land is removed or transferred to another project, or in some cases if a reversal of carbon sequestered occurs.

We have developed guidance which details how the agency will apply the relinquishment requirements for emissions avoidance and sequestration projects. Where the CFI Act provides the agency with discretion as to how to apply the relinquishment requirements, the agency will apply them to carbon credits issued for sequestration only.

Carbon credit discounts typically applied to ERF sequestration projects

Because sequestered carbon must be stored for 100 years to be generally considered to have a 'permanent' benefit to the atmosphere, ERF sequestration projects that elect a 25-year permanence period generally receive a 20% reduction in carbon credits issued. This is called the 'permanence period discount' and is intended to protect the ERF against the risk that sequestered carbon will be reversed at the end of a project's 25-year permanence period.

ERF sequestration projects electing either a 25-year or 100-year permanence period are also subject to the 'risk of reversal buffer', receiving a 5% reduction in carbon credits issued. The risk of reversal buffer is intended to protect the ERF against temporary losses of carbon and residual risks that cannot be managed by the other permanence arrangements.

In total, ERF sequestration projects electing a 25-year permanence period receive a 25% reduction in carbon credits issued, while those electing a 100-year permanence period receive a 5% reduction. These discounts are applied to the net abatement amount calculated for each reporting period.

Because the net abatement amount calculated for blue carbon projects includes both sequestration abatement and emissions avoidance abatement, this standard discounting framework is not fit for purpose as it would discount the emissions avoidance abatement achieved by the project. As such, a unique discounting framework (discussed below) has been developed for blue carbon projects to ensure discounts are only applied to the sequestration component of the abatement.

Carbon credit discounts applied to blue carbon projects

For most ERF methods, the permanence period discount and risk of reversal buffer are defined by the CFI Act. The CFI Act also allows however, for alternative discounts to be established through the CFI Rule.

For the blue carbon method, the permanence period discount number and risk of reversal buffer number are each defined as zero by section 9B of the CFI Rule. The blue carbon method instead applies a *sequestration buffer* to ensure that discounts are applied only to the sequestration abatement in blue carbon projects, and not the emissions avoidance abatement.

For projects electing a 25-year permanence period, the sequestration buffer will apply a discount of 25% to the sequestration abatement of a project. This aligns with the standard discounting framework that applies

to ERF sequestration projects with a 25-year permanence period, however, it ensures that the discounts are not applied to emissions avoidance abatement.

For projects electing a 100-year permanence period, the sequestration buffer will depend on the proportion of land projected to be impacted land by the hydrological assessment that is included in the project area of the project (see details below).

Carbon credit discounts applied to 100-year permanence period projects

Due to the impacts of sea level rise, the coastal wetland ecosystems that establish due to the introduction of tidal flows may be lost from their original sites and re-establish further inland over time. The risk of this occurring is higher over longer timelines and is therefore particularly relevant for projects that choose a 100-year permanence period.

We recommend, where possible, that projects electing a 100-year permanence period include within the project area, the entire area of land that is projected in the hydrological assessment to be impacted by the introduction of tidal flows during the 100-year permanence period, taking into account projections of sea level rise according to the Intergovernmental Panel on Climate Change (IPCC) RCP 8.5[6] scenario.

Where 100-year permanence period projects are able to include between 80-100% of land projected to be impacted land during the permanence period in their project area, the sequestration buffer will apply a 5% discount to the sequestration abatement.

Where 100-year permanence period projects include less than 80% of land projected to be impacted land during the permanence period in their project area, the sequestration buffer will apply a discount of 25% to the sequestration abatement. This is intended to manage the risk that coastal wetland ecosystems that establish in the project area could be lost and re-establish outside the project area, leading to a potential loss of carbon. The risk arises because land located outside of the project area is not subject to the scheme's permanence rules.

TABLE 1: DISCOUNTS APPLIED TO BLUE CARBON PROJECTS

Project type	Discount applied to sequestration abatement:
25-year permanence period project	25%
100-year permanence period project which includes at least 80% of land identified as impacted land in the hydrological assessment, in the project area	5%
100-year permanence period project which includes less than 80% of land identified as impacted land in the hydrological assessment, in the project area	25%

[6] The Representative Concentration Pathways (RCPs) are developed and used by the Intergovernmental Panel on Climate Change (and others) for making sea level rise projections based on anthropogenic greenhouse gas (GHG) emissions scenarios, and describe four different 21st century pathways of GHG emissions, atmospheric concentrations, air pollutant emissions and land use over the next 100 years. RCP8.5 is the very high GHG emissions scenario resulting in the greatest amount of sea level rise compared with the other RCP scenarios: https://ar5-syr.ipcc.ch/topic_summary.php

These discounting arrangements apply the same level of discounts to both 25 and 100-year permanence projects where less than 80% of the land projected to be impacted by tidal flows during the 100-year permanence period is included in the project area. As such, project proponents may be incentivised to include at least 80% of the area projected to be impacted by the project activity where a 100-year permanence period is chosen.

The agency recognises that in some cases, it will not be possible to include all - or the majority - of land projected to be impacted by tidal flows in the project area, if it is owned by landholders who do not wish to participate in the blue carbon project. The discounting arrangements are intended to address such a scenario.

In these circumstances, project proponents may be incentivised to choose a 25-year permanence period noting that the level of discounting would be the same, and the shorter timeline may reduce the area of impacted land. Alternatively, project proponents could use existing or new infrastructure and drainage to manage projected tidal flows in such a way that the area of land identified as impacted land by the hydrological assessment is reduced, and therefore less land is required to be included in the project area.

Co-benefits

In addition to opportunities for carbon abatement, blue carbon projects offer a wide range of co-benefits of environmental, socio-economic, and cultural significance. Examples include the rehabilitation of ecologically significant habitats, enhancing the resilience of coastlines, improving and maintaining water quality, and ensuring the protection of coastal wetland ecosystems, which may be culturally significant to First Nations peoples. Particular aspects of the method have been designed with such co-benefits in mind including allowing environmental wetland planting to encourage regeneration using local native mangrove or saltmarsh species, and the exclusion of fertiliser use.

Considerations that could influence the co-benefits achieved by your project include:

- Engaging with local and State/Territory and Commonwealth Governments to identify whether your project is in an area of ecological significance, or whether there are natural resource management (NRM) plans already in place for your project area;[7]
- Referring to mapping tools to determine whether matters of environmental significance are in your project area. For example, the 'Protected Matters Search Tool' identifies if matters of national environmental significance or other matters protected by the *Environment Protection and Biodiversity Conservation Act (1999)* are likely to occur in your project area[8];
- Working with experts to identify opportunities to optimise ecological and other co-benefits including through appropriately managing tidal inundation;
- Consulting and seeking free, prior, and informed consent from First Nations peoples in the context of your project occurring on First Nations Land (e.g. Aboriginal freehold land or land with a native title determination or claim), and/or collaborating with First Nations peoples in the context of their participation in the project[9].

[7]Your project must be consistent with the NRM plans. When registering your project, you will be required to list the NRM plan(s) that cover the location(s) of your project and state that your project is consistent with these plans.

[8] https://www.environment.gov.au/epbc/protected-matters-search-tool

[9] Please also see the agency's Native title, legal right and eligible interest-holder consent guidance released June 2018 on its website.

Other blue carbon programs

The agency is aware of private schemes which support co-benefits that may interact with blue carbon projects in the future. For example, the Reef Credits Scheme supports water quality improvement projects in the Great Barrier Reef[10].

There are also other Government programs operating in the blue carbon space[11]. For example, the Department of Agriculture, Water, and the Environment is administering the Blue Carbon Conservation Restoration and Accounting Program[12]. This program will fund on-ground implementation of at least four large blue carbon restoration projects, representing a variety of coastal ecosystem types (including mangroves, seagrass, and saltmarshes) and socio-economic characteristics. The objective of the program is to implement various on-ground ecosystem restoration activities, and demonstrate how these lead to measured climate, biodiversity and livelihood benefits.

The ERF allows for multiple sources of funding in many circumstances. However, if you are exploring opportunities for additional funding, it is important that you consider potential implications for the *newness* eligibility requirements discussed in section 1.2.

1.2 General eligibility requirements

Key considerations are highlighted below. For more information on eligibility, visit the planning a project[13] page on our website.

Additionality: Newness

For a project to be declared an eligible offsets project, Section 27(4A)(a) of the CFI Act requires the project 'has not begun to be implemented'. This means that you cannot start your project activities before registering your ERF project. That is, you cannot remove or modify the tidal flow restriction mechanism before registration.

However, you can begin preparation for your project.

Examples of actions that by themselves would not indicate a project has started are defined in section 27(4A)(a) of the CFI Act:

- conducting a feasibility study for the project
- planning or designing the project
- obtaining regulatory approvals for the project
- obtaining consents relating to the project
- obtaining advice relating to the project
- conducting negotiations relating to the project

[10] http://www.reefcredits.org/

[11] https://www.environment.gov.au/water/wetlands/publications/wetlands-australia/national-wetlands-update-february-2019/govt-initiatives-blue-carbon

[12] https://www.awe.gov.au/science-research/climate-change/ocean-sustainability/coastal-blue-carbon-ecosystems/conservation#:~:text=The%20Blue%20Carbon%20Conservation%2C%20Restoration,for%20climate%20and%20the%20environment.

[13] http://www.cleanenergyregulator.gov.au/ERF/Want-to-participate-in-the-Emissions-Reduction-Fund/Planning-a-project

- an activity that is ancillary or incidental to any of the above activities.

Additionality: Regulatory

For a project to be declared an eligible offsets project, Section 27(4A)(b) of the CFI Act requires the project is 'not required to be carried out by or under a law of the Commonwealth, a State or a Territory'.

In October 2020, the agency published guidance on the approach for addressing regulatory additionality where greenhouse gas offset obligations are imposed by State or Territory Governments[14]. In brief, where an entity establishes an ERF project and is also subject to a regulatory obligation to reduce or offset their emissions (but it does not specify a particular activity to do so), any carbon credits generated by that project used to meet the regulatory requirements must be put aside permanently in a Commonwealth holding account. These units cannot be sold or transferred to another party including the Commonwealth to prevent double counting. However, any carbon credits resulting from the project that are not used to meet a regulatory obligation can be made available to the market.

Additionality: Government program

Section 21 of the CFI Rule creates in-lieu of government program requirements that substitute for the general requirements in paragraph 27(4A)(c)(i) of the CFI Act. Section 21 of the CFI Rule excludes ERF projects from also receiving funding or certificates under some State and Commonwealth programs, including the Renewable Energy Target (in some circumstances), some state-based energy efficiency certificate schemes, and the 20 Million Trees Program. However, ERF projects may receive funding from other government programs not listed in Section 21 of the CFI Rule.

Hold legal right

You need to ensure you have the exclusive legal right to carry out the project activities for the duration of your project, and to have the lawful exclusive right to be issued all carbon credits that may be granted as a result of the project activities.

Establishing legal right for a project will involve identifying who has a legal interest in the proposed project area, such as landowners, lease holders or determined native title holders. For blue carbon projects, this extends to areas of land outside the project area, in certain circumstances where the hydrological assessment for the project made under section 15 of the method identifies such land as impacted land.

Project proponents will then need to seek to be granted the legal right to carry out the project activities and be issued the resulting carbon credits for the duration of the project, by any entity with a legal interest in the proposed project area, or outside the project area in certain circumstances where this land is identified as impacted land by a hydrological assessment. This usually occurs by entering into a written agreement such as a commercial contract, which may include contractual allocations of carbon credits from the project proponent to those with interests in the blue carbon project area.

Landholders of impacted land will be required to sign a declaration they will pass on details of the project to any potential purchasers. The project proponent will also be required to inform themselves of changes in land ownership outside of the project area and inform new landholders of the project.

[14] http://www.cleanenergyregulator.gov.au/ERF/Want-to-participate-in-the-Emissions-Reduction-Fund/Planning-a-project/regulatory-additionality-and-government-programs/regulatory-additionality-for-regulated-entities-with-state-or-territory-emission-reduction-or-offsetting-requirements

For projects being undertaken across several properties involving multiple owners or leaseholders, legal right will need to be granted by all relevant landowners and leaseholders to provide the project proponent with the exclusive legal right to run the project and earn carbon credits.

Legal right must be maintained for the duration of the permanence period for a project. Where legal right is lost and cannot be re-obtained, the project becomes susceptible to revocation. If revoked, carbon credits issued for the sequestration components of the project may be required to be relinquished. In circumstances where legal right is only lost for a proportion of the project area, the project proponent can apply to transfer that land from the project area to a transferee project that can then be revoked.

For a blue carbon project, arrangements for maintaining legal right for the duration of the permanence period may need to take into account the impacts of sea level rise. Where legal interests are delineated through tidal property boundaries, property lines may shift due to sea level rise such that legal right is incrementally lost for areas of the project area closest to the shore. The most likely scenarios where legal right may be lost due to sea level rise are for tidal property lines where land ownership reverts to the state and where native title is recognised on the seaward side. We recommend any legal arrangements, which provide the project proponent with legal right also include a process whereby legal right will be granted for any areas where legal right would otherwise be lost gradually over time due to sea level rise. Entering into an arrangement for prospective granting of legal right where legal interests change due to sea level rise, will also absolve project proponents of their obligation to notify the agency of any changes in legal right within 90 days.

The hydrological assessment that project proponents must undertake for project registration will help inform legal arrangements that may be required in order to obtain and maintain legal right and identify predicted changes in legal interest for the project area over time. For more information on legal right visit our website[15].

Between 30 and 45 days before undertaking the project activity, the project proponent must notify all landholders projected to be impacted by the introduction of tidal flow during the project's permanence period of the date when the removal or modification of a tidal restriction mechanism is expected to begin and provide them with the hydrological assessment that shows the projected impacts of the removal or modification.

Eligible interest holder consent

You will need consent from all eligible interest-holders — stakeholders who hold an interest in the land that is included in the project area – before the end of the first crediting period for your project (i.e. within a maximum of 7 years after project registration).

For blue carbon projects, consent requirements also include areas of land outside the project area, in certain circumstances where the hydrological assessment for the project made under section 15 of the method identifies such land as impacted land.

For projects with a 25-year permanence period, this includes all areas of land identified as impacted land in a current permanence period tidal inundation map at the end of the first reporting period for the project.

For projects with a 100-year permanence period, this includes:

[15] http://www.cleanenergyregulator.gov.au/ERF/Want-to-participate-in-the-Emissions-Reduction-Fund/Planning-a-project/Legal-right

- all areas of land identified as impacted land in a current crediting period tidal inundation map at the end of the first reporting period for the project; and
- all areas of land identified as impacted land in a current permanence period tidal inundation map at the end of the first reporting period for the project, where the eligible interest holder's interest in the land could extend beyond the end of the 25-year crediting period for the project.

TABLE 2: SUMMARY OF ELIGIBLE INTEREST HOLDER (EIH) CONSENT REQUIREMENTS FOR BLUE CARBON PROJECTS

Type of land held by eligible interest holder	25-year permanence period project	100-year permanence period project
Inside project area	EIH consent required	EIH consent required
Impacted land as per crediting period tidal inundation map	N/A – crediting period tidal inundation maps are not required for 25-year permanence period projects	EIH consent required
Impacted land as per permanence period tidal inundation map	EIH consent required	EIH consent required if eligible interest in the land extends beyond the end of the 25-year crediting period for the project

Eligible interest holders may include:

- Any mortgagees — typically banks.
- Other people or parties that share, have ownership or leases of the land within the project area/s.
- Native title holders. See our website[16] for more information.
- For leased Crown land – the Crown Lands Minister needs to provide consent to the project activity, usually through a relevant state or territory lands department.
- The owner/s of the land where the tidal flow restriction mechanism exists. This may be the relevant state or territory lands department.

Eligible interest holder consents must be provided using the approved consent form[17], or by having consent detailed in a registered Indigenous Land Use Agreement.

Native title, legal right and eligible interest-holder consent considerations

The agency has published guidance[18] on native title, legal right and eligible interest-holder consent considerations for ERF projects. This guidance contains best practice recommendations for obtaining eligible interest holder consent, which include the principle of free, prior and informed consent when running a project on land that is subject to native title.

[16] http://www.cleanenergyregulator.gov.au/ERF/Want-to-participate-in-the-Emissions-Reduction-Fund/Planning-a-project/native-title

[17] http://www.cleanenergyregulator.gov.au/ERF/Choosing-a-project-type/Opportunities-for-the-land-sector/eligible-interest-holder-consent

[18] http://www.cleanenergyregulator.gov.au/DocumentAssets/Pages/Native-title-legal-right-and-eligible-interest-holder-consent-guidance.aspx

To mitigate the risk of projects failing due to lack of consent, it is in the best interests of project proponents to ensure eligible interest holders are engaged before project application, and before project activities begin. It is critical those providing consent are appropriately consulted and know what is being agreed to. Where consent is being provided by native title holders, the requirements of the Native Title Act (including the future acts regime) must be considered in determining the process for consent. Entering into an Indigenous Land Use Agreement may be one option for proponents to ensure that native title requirements are satisfied.

Regulatory approvals

You also need to ensure you have all relevant approvals, licenses or permits that are required before carrying out project activities.

Your blue carbon project must be undertaken in accordance with relevant State, Territory and Commonwealth legislation. In the majority of situations, it will be State or Territory legislation that details the process for authorising or approving the modification or removal of a tidal flow restriction mechanism.

Impacts to matters listed in the *Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth)* (the EPBC Act) such as declared Ramsar wetlands, listed migratory species, and listed threatened species and ecological communities must be assessed by the Australian Government Department of Agriculture, Water and the Environment. Projects will also be required to follow any environmental assessment processes for the State or Territory, or local government jurisdictions that the projects are located within.

See Appendix 2 for an overview of approvals likely to be required for blue carbon projects in each state and territory. To learn more about your obligations under the EPBC Act and the associated approval processes, you should review the Department of Agriculture, Water and Environment's EPBC Stakeholder Information Kit[19].

Fit and proper person assessment

You need to be recognised, and continue to be recognised, as a fit and proper person[20] for the purposes of the ERF. The fit and proper test involves declarations about any convictions or insolvency and whether a person has the capabilities needed to run a project.

DEADLINES FOR CONSENT AND APPROVALS

All eligible interest-holder consents and regulatory approvals must be supplied to us before the end of your first reporting period (which is set in legislation and will be, at the latest, 7 years after project registration).

Your project will be registered 'conditionally' until all consents and approvals are provided. Conditionally registered projects cannot receive carbon credits. You can remove conditions by providing consents through a project variation application (see Appendix 3 — *project variations*).

[19] https://www.environment.gov.au/system/files/pages/5e1ffd9c-3871-4310-8518-ab82bffc941e/files/epbc-stakeholder-information-kit-factsheets.pdf

[20] http://www.cleanenergyregulator.gov.au/About/Policies-and-publications/fit-and-proper-person-posture

1.3 Land eligibility requirements

Land eligibility

Your land will need to meet eligibility criteria in order for you to run a blue carbon project. Land is eligible for inclusion in a blue carbon project if:

- During the 7 years before your project application a tidal restriction mechanism has been in place that has excluded or restricted tidal flows from the land, and by removing or modifying the tidal restriction mechanism/s, the land will be impacted by tidal inundation. This must be evidenced by the 'project start tidal inundation map' you will prepare as part of your hydrological assessment (see 1.6 - *hydrological assessment*).

or

- During the 7 years before your project application, a tidal restriction mechanism has been in place that would exclude or restrict tidal flow from the land during the project's 25-year crediting period, and by removing or modifying the tidal restriction mechanism, the land will be impacted by tidal inundation during the crediting period. This must be evidenced by either the 'permanence period tidal inundation map' (for 25-year permanence period projects) or the 'crediting period tidal inundation map' (for 100-year permanence period projects) you will prepare as part of your hydrological assessment (see 1.6 - *hydrological assessment*).

Excluded offsets projects

The CFI Regulations identify a number of project types that are not eligible for registration under the ERF. These include projects that establish vegetation where:

- The illegal draining of a wetland or illegal clearing of a native forest has occurred (CFI Regulation 3.36 (1)(e));
- Clearing of native forest or draining of a wetland (that was not illegal), has occurred within (CFI Regulation 3.36 (1)(f)):
  - 7 years of project application lodgement where land ownership change has not occurred during this time, or
  - 5 years of a project application lodgement where land ownership change has occurred during the previous 7 years.

And projects that protect native forest where:

- a clearing consent or harvest approval plan was granted on the basis that clearing or harvesting of the native forest (CFI Regulation 3.36 (1)(g)):
  - would maintain an environmental outcome or lead to an environmental improvement or benefit, or
  - was for fire management purposes.

You will need to provide us with evidence that no illegal draining of a wetland has occurred. This could be planning approval from the relevant state or territory government authority for the tidal restriction mechanism or a letter from the authority stating that no approval was required.

1.4 Project extent map

As part of your project registration application, you will need to prepare project extent mapping. Project extent mapping is used to identify key features of any areas of land that will be impacted by tidal inundation as a result of your project during your project's permanence period. Your project extent mapping must include the following information:

- All project areas included in your project.
- Land tenure including but not limited to private and public land, National Parks and conservation areas, marine reserves and native title determinations boundaries.
- Water features including rivers, lakes and the ocean.
- Features of relevance for regulatory approvals including but not limited to acid sulfate soils, threatened and migratory species, threatened ecological communities, Ramsar and nationally important wetlands and registered Aboriginal heritage sites.
- The location of the tidal restriction mechanisms, necessary infrastructure, existing infrastructure and drainage infrastructure you intend to remove, modify, install, or rely on as part of your project.
- Other infrastructure including buildings, roads and powerlines relevant for planning your blue carbon project.
- Any other information required by the blue carbon method supplement.

You can create your project extent mapping using geographic information system (GIS) software. QGIS (free), Google Earth (free) and ArcGIS (paid) are examples of commonly used GIS tools. Refer to section 3.3 for further details.

The spatial data used to prepare your project extent map should be used as the base layers for your hydrological assessment (see 1.6 – *hydrological assessment*). Once you have finalised your hydrological assessment, you may need to revise your initial project extent mapping to ensure it includes the entire area that is projected to be impacted by tidal inundation in the project start map, as identified through your hydrological assessment.

1.5 Project operations and maintenance plan

As part of your project registration application, you will need to prepare a project operations and maintenance plan. This plan provides an overview of your intended project activities and any ongoing maintenance responsibilities you may have. It is also used to inform your hydrological assessment (see 1.6 – *hydrological assessment*). The requirements for project operations and maintenance plans are detailed in the blue carbon method and the blue carbon supplement. The plan must include:

- information about each tidal restriction mechanism you intend to remove or modify, and any infrastructure or drainage infrastructure that you intend to modify, install or rely on as part of your project activities including:
  - » the location/proposed location of the tidal restriction mechanism, necessary infrastructure or drainage infrastructure
  - » the approximate dimensions of the tidal restriction mechanism, necessary infrastructure or drainage infrastructure
  - » the design specifications/objective of proposed works related to the tidal restriction mechanism, necessary infrastructure or drainage infrastructure

  - any maintenance actions required to ensure the ongoing function of the tidal restriction mechanism, infrastructure or drainage until the end of the permanence period of your project
- a description as to how any relevant Commonwealth, State or Territory government legislative requirements will be addressed before the removal, modification, installation or construction of any tidal restriction mechanisms, necessary infrastructure, or drainage infrastructure. Legislative requirements may relate to:
  - acid sulfate soils
  - protected flora, fauna or heritage
  - Ramsar or nationally important wetlands
  - contaminated lands
  - flood mitigation
  - infrastructure design
  - mosquito management

1.6 Hydrological assessment

You will also need to prepare a hydrological assessment as part of your project registration application. The hydrological assessment details the projected tidal inundation that will occur through your blue carbon project, taking into account projected sea level rise and your project operations and maintenance plan. It is also used to identify which areas of land meet the eligible land requirements and may be included or are required to be included in your blue carbon project.

The requirements for the hydrological assessment are detailed in the blue carbon method and the blue carbon supplement. The hydrological assessment must include:

- **a project start tidal inundation map** which identifies the spatial extent of tidal inundation after you complete the project activity.
- **a permanence period inundation map** which identifies the spatial extent of tidal inundation due to your project activity at the end of your permanence period.
  - For 25-year permanence period projects, this map must cover the time period of 32 years from a date which is within 24 months of your project registration application. The additional 7 years is to provide flexibility as you won't know exactly when your permanence period will end when you are preparing your hydrological assessment. You may wish to consider covering more than 32 years in case your project registration application is delayed.
  - For 100-year permanence period projects, this map must cover the time period of 107 years from a date which is within 24 months of your project registration application. The additional 7 years is to provide flexibility as you won't know exactly when your permanence period will end when you are preparing your hydrological assessment. You may wish to consider covering more than 107 years in case your project registration application is delayed.
- For projects choosing a 100-year permanence period, a crediting period tidal inundation map is also required which identifies the spatial extent of tidal inundation through your project activity at the end of the 25-year crediting period.
  - This map must cover the time period of 32 years from a date within 24 months of your project registration application. The additional 7 years is to provide flexibility as you won't know exactly when your crediting period will end when you are preparing your hydrological assessment.

You will need a *qualified person* to prepare or review the maps that you create as part of a hydrological assessment. The qualified person must be someone who has knowledge of tidal hydrodynamics and floodplain inundation, experience in the provision of floodplain inundation services, and a good understanding of the limitations and applicability of numerical modelling in shallow coastal environments.

You will also need a *qualified engineer* to review your hydrological assessment and project operations and maintenance plan in tandem, to ensure that any proposed infrastructure works (as detailed in your project operations and maintenance plan) are fit for purpose. The qualified engineer must be someone who has knowledge of and experience in assessing the functional performance of objects, devices and structures of the kind used by the project to modify or manage tidal flows. Where they have the appropriate knowledge and experience, the qualified person and the qualified engineer can be the same person.

1.7 Managing adverse impacts

Your project extent mapping will identify potential adverse impacts which may arise through your blue carbon project. You are required to manage these in accordance with any relevant Commonwealth, State and Territory and local government requirements.

Ramsar wetlands and nationally important wetlands

Ramsar wetlands are sites containing representative, rare, or unique wetlands, or that are important for conserving biological diversity. All Australia's internationally and nationally important wetlands are listed on the Australian Wetlands Database[21] which contains site mapping and links to key information about the values and management of listed wetlands.

Potential adverse impacts by projects to declared Ramsar wetlands and other nationally important wetlands, must be identified, and the appropriate regulatory approvals sought and granted before undertaking the project activity.

- Ramsar wetlands are covered by the *Environmental Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act). Approvals must also be sought and granted where potential impacts are identified for other wetlands that are protected under State, Territory or Commonwealth legislation.

Threatened and migratory species and threatened ecological communities

Threatened species and ecological communities are nationally listed under a number of categories based on the threat. Threats can include changes to the aquatic environment and water flows. You can search for nationally listed species and communities by region using the Department of Agriculture, Water and Environment's Species Profile and Threats Database[22]. Proponents should also consider coastal species and communities that are subject to assessment of their conservation status for potential listing by the Department of Agriculture, Water and Environment[23].

Migratory species listed under international agreements include birds, reptiles, mammals and sharks, and some species are also listed as nationally threatened species. Wetland habitat loss and degradation is a significant threat to migratory species which are dependent on coastal wetlands along their migration

[21] https://www.environment.gov.au/water/wetlands/australian-wetlands-database
[22] https://www.environment.gov.au/cgi-bin/sprat/public/conservationadvice.pl
[23] https://www.environment.gov.au/biodiversity/threatened/assessments

routes. Links to information, conservation and recovery plans for these species are available on the Department of Agriculture, Water and Environment's Migratory species in Australia webpage[24].

Biologically important areas for breeding, foraging, resting or migration that have been identified for regionally significant marine species can also be found on the Department of Agriculture, Water and Environment's website[25].

Potential adverse impacts by projects to threatened and migratory species or threatened ecological communities must be identified, and the appropriate regulatory approvals sought and granted before undertaking the project activity.

Nationally listed threatened and migratory species and ecological communities are covered by the EPBC Act. Species and ecological communities listed as threatened at the State or Territory level and not at the national level, are covered by legislation of the State or Territory that they are located within.

Acid sulfate soils

Land with acid sulfate soils must be identified as part of the project extent mapping according to the requirements of the blue carbon supplement. Where the disturbance of acid sulfate soils is likely to occur as part of activities for a blue carbon project and there are policies or regulations that apply to managing acid sulfate soils in the project's jurisdiction, project proponents must provide the agency with an acid sulfate soils management plan in accordance with any available policies and regulations of the Commonwealth, or the relevant State or Territory or local government authority.

Further, appropriate regulatory approvals must be sought and granted, and the necessary remediation activities undertaken before beginning the project activity.

Mosquito management

The reintroduction of tidal flows into a blue carbon project area may result in the presence of mosquito hazard, which may become a public health safety issue where projects are located in close proximities to public recreation areas or urban areas. As part of project registration, where there are policies or regulations that apply to managing mosquito hazard in the project's jurisdiction, project proponents must provide the agency with a mosquito management plan that is prepared in accordance with any applicable Commonwealth, State or Territory, or local government laws and guidelines.

1.8 Deciding on a project proponent

The project proponent is the person or organisation legally responsible for running an ERF project. If you are considering conducting an ERF project on your land, an important consideration is who the 'project proponent' will be.

You can be the project proponent; several property owners could jointly register a single project as the proponent; or you can engage another person or organisation to be the proponent. Alternatively, you can be the project proponent and engage an agent to act on your behalf and undertake the administration for your project.

[24] https://www.environment.gov.au/biodiversity/migratory-species

[25] https://www.environment.gov.au/biodiversity/migratory-species

Choosing who the project proponent will be is an important business decision. For more information read our Being a Proponent factsheet[26].

1.9 Estimating project returns and costs

Estimating returns

The number of carbon credits earned over the crediting period will depend on many factors, including project size, climatic zone, and the types of coastal wetland ecosystems that regenerate once tidal flow is introduced.

The agency runs regular auctions to buy carbon credits from projects. In bidding at an auction you can secure a carbon abatement contract to sell carbon credits to the Australian Government[27].

Selling carbon credits to us is not the only option: you can also sell carbon credits on the 'secondary market' to private companies or state governments looking to offset their emissions.

There are also government programs, such as the Land Restoration Fund in Queensland, that may provide additional financial support for ERF projects, particularly those that provide environmental, social and economic benefits in addition to carbon abatement.

Estimating costs

There are a range of set-up, operating (including monitoring and record-keeping), reporting and audit costs when running a blue carbon project.

Costs will vary by project and may arise from:

- Completing a hydrological assessment and project operations and maintenance plan.
- Removing or modifying the tidal flow restriction mechanism.
- Costs associated with approvals.

You should also factor in resources needed for monitoring and record-keeping.

Preparing project reports may also incur costs, for example hiring consultants to assist with mapping and modelling.

You will need to report at least once every five years.

You will need to engage an auditor to prepare an audit report.

- At least three audits are required over the crediting period.
- The first audit is due with your first offsets report.

[26] http://www.cleanenergyregulator.gov.au/csf/how-it-works/Pages/Being-a-project-proponent-information-for-landholders.aspx

[27] http://www.cleanenergyregulator.gov.au/ERF/Want-to-participate-in-the-Emissions-Reduction-Fund/Step-2-Contracts-and-auctions/understanding-carbon-abatement-contracts

Step 2: Registering your blue carbon project

2.1 Registration requirements

Once you have completed all of the planning requirements, you can apply to register your blue carbon project at our website[28]. You need to register your project with us before you start any project activities. Information you will be required to provide to register your project includes:

- A summary of the project including details of its location.
- Details of the project proponent.
- Details of the project's activities that show how they are eligible under the method.
  - This includes evidence that the tidal restriction mechanism(s) to be removed or modified to introduce tidal flows to land were in place at least 7 years before the project application. Evidence could include time stamped photographic or satellite imagery, declarations or invoices for construction or maintenance works.
- The skills and expertise available to the applicant to run the project.
- The choice of permanence period for the project.
  - The permanence period cannot be varied once the project has been registered. The hydrological modelling required to occur before registering a blue carbon project may inform the choice of permanence period.
- Evidence including planning approvals that the tidal restriction mechanism(s) were permitted under the relevant state or territory laws to be installed when first installed.
- Evidence of legal right obtained (if required) to conduct the project activities inside the project area and the land outside of the project area predicted to be impacted by the introduction of tidal flow as identified through your hydrological assessment for the duration of the project permanence period (see 1.2 – *native title, legal right and eligible interest holder consent considerations* for further guidance).
- Evidence of all regulatory approvals granted as required by relevant State, Territory, and Commonwealth government entities to undertake all activities associated with the blue carbon project.
  - These can be provided up to the end of the first reporting period (the project will be conditionally registered until these are provided).
- All eligible interest holder consents from person(s) with an eligible interest in the project area and the areas of land outside of the project area that have been identified as impacted land by the hydrological assessment.
  - These can be provided up to the end of the first reporting period (the project will be conditionally registered until these are provided).
- A project operations and maintenance plan, prepared in accordance with the blue carbon supplement.
- A hydrological assessment prepared in accordance with the blue carbon supplement.
- Project extent mapping prepared in accordance with the blue carbon supplement.

[28] http://www.cleanenergyregulator.gov.au/ERF/Want-to-participate-in-the-Emissions-Reduction-Fund/Step-1-Apply

- Where required, an acid sulfate soil management plan and a mosquito management plan.
- A permanence plan – an explanation of the steps you will take to ensure carbon remains sequestered in the project area for the duration of the project period.
- A forward abatement estimate – how much abatement in carbon credits you expect your project will deliver.

We will assess your registration application as quickly as possible and within the statutory timeframes (90 days) unless further information is required. The agency is making enhancements to our systems so that in the future we will be able to assess your application within 45 days if all the required information is provided.

2.2 Project area map

When applying to register your project, you will also need to provide a map that details your project area. Your blue carbon project may include land within a single property or include land across several properties where multiple landholders are participating in a single blue carbon project. Your project may include one or more project areas.

Importantly, your project area(s) must include all land that will be inundated on completion of the project activity as identified in your project start tidal inundation map. This is intended to manage the risks of adverse impacts and carbon losses from impacts of tidal inundation on existing vegetation not being accounted for. It is recommended that, where possible, you also include all land (or as much as possible) identified as impacted land in your permanence period tidal inundation map. Where it is not possible to include all impacted land identified in your permanence period tidal inundation map in your project area, you will be required to obtain consent from the landholders of the impacted lands not included.

TABLE 3: LAND TO INCLUDE IN YOUR PROJECT AREA

Land	Is the land required to be included in your project area?
Land identified as impacted land in your **project start tidal inundation map** prepared for your hydrological assessment	**Yes**
Land identified as impacted land in your **permanence period tidal inundation map** prepared for your hydrological assessment (that is additional to impacted land identified in your project start tidal inundation map).	**No**, however: » You will be required to obtain written consent from the landholders of impacted land not included in your project area » If you are a 100-year permanence period project, including less than 80% of impacted land will influence the carbon credit discounts that apply to your project
Land that does not meet the land eligibility requirements	**No**, however you can include ineligible land in your project area mapping for simplicity (provided it will not form part of a CEA).

A project area map must include eligible land, but for simplicity of mapping does not need to exclude ineligible areas of land. The parts of your project area which are not within CEAs can include ineligible land, for example land that is not affected by the introduction of tidal flow during the period the offsets report

covers. Activities not permitted within CEAs can be undertaken within the parts of your project area that are not included within CEAs.

You may wish to include new areas of land that are part of your project areas as CEAs as your project progresses over time and coastal wetland ecosystems begin to establish at higher elevations with sea level rise. If you intend to do so, you need to be aware that certain activities cannot be undertaken/may only be undertaken with restrictions on land that is to become part of a CEA (see 3.2 – *restricted and prohibited activities*).

Land within your project area where you wish to calculate abatement must be mapped as CEAs (see 4.3 – *Defining Carbon Estimation Areas*) before submitting your first offsets report.

2.3 Forward abatement estimate

You need to provide us with a forward abatement estimate. This is your best estimate of the number of carbon credits likely to be earned during the crediting period.

This information is used to assign an audit schedule to your project. The current audit framework means most projects are likely to require three audits.

One way to calculate a forward abatement estimate would be to use the maps produced as part of the hydrological assessment to estimate the area and type of blue carbon ecosystems that may establish, and then to input this data into BlueCAM to obtain the forward abatement estimate (see 4.4 – *Calculating carbon abatement*).

Step 3: Delivering your blue carbon project

You can begin your project activities (removing or modifying your tidal flow restriction mechanism and installing or modifying additional infrastructure) after your project is registered and you have required approvals to undertake the project activities.

3.1 Ongoing management

Participants are required to conduct management activities to prevent carbon losses in their projects including from fire, weeds and feral animals. This includes conducting all management activities required by a law of the Commonwealth, or a State or Territory government. The steps required to maintain sequestered carbon will have also been detailed in your permanence plan.

You will also need to carry out any maintenance actions for tidal restriction mechanisms, necessary infrastructure or drainage infrastructure, as outlined in your project operations and maintenance plan.

3.2 Restricted and prohibited activities

There are a number of activities which have specific restrictions or are prohibited in blue carbon projects under the ERF. The purpose of the restricted activities under the method is to enable activities that support the establishment of coastal wetland ecosystems while preventing actions that could adversely impact on the abatement of carbon within CEAs. The following activities are **permitted with restrictions** during the permanence period of a blue carbon project, within CEAs:

- Planting of seeds, propagules or plants in CEAs that are defined as species that:
  - » Are native to the local area of the planting, and

- Are sourced from plant material:
  - From the natural resource management region(s) of the project area, and
  - Are of the coastal wetland ecosystem type identified by hydrological assessment undertaken according to the requirements of the blue carbon supplement, likely to establish due to the introduction of tidal flow for the location being planted.

- Harvesting of fallen timber for firewood.
  - Up to 10% of fallen timber per calendar year, within a CEA, for personal use as firewood only.
- Thinning and minor removals:
  - Thinning to promote the growth of coastal wetland ecosystems is permitted up to 5% of the total above and below ground biomass in a reporting period, and the biomass must remain within the CEA. Biomass removal can be performed if the thinning was conducted for the purpose of weed control.
  - Other minor removals to promote biodiversity are permitted up to 5% of the total above and below ground biomass in a reporting period, per CEA. Biomass must remain within the project area.
  - Minor removals for sequestration sampling purposes, to a maximum of 5% of the total above and below ground biomass per calendar year, per CEA.
    - Note that while sampling is not required under this method, project proponents may wish to undertake sampling for research purposes.
  - Harvesting of biomass in accordance with traditional indigenous practices or native title rights.
  - Boardwalks are permitted within a CEA; however, they must not impact more than 5% of the total above and below ground biomass per calendar year per project area, for example, from construction and placement.
    - Boardwalks are generally constructed in a way to minimise soil erosion, damage to fragile vegetation, and transmission of plant diseases within coastal wetlands where access by people is expected. This allows access to coastal wetlands for monitoring and management purposes. The construction of boardwalks within CEAs is supported under the blue carbon method provided these have a minimal impact on vegetation sequestration.
- Excavation activities within a CEA are only permitted if undertaken:
  - In connection with carrying out eligible project activities for the project; or
  - In accordance with a current acid sulfate soils management plant for the project to prevent adverse impacts to acid sulfate soils (see 1.7 – *Acid sulfate soils*).

The following activities are **prohibited** within a CEA during the permanence period of a blue carbon project:

- Application of fertiliser,
- Growing crops and grazing by livestock,
- Conducting aquaculture activities:
  - The farming of – including breeding, rearing and harvesting, of fish, molluscs, crustaceans, algae, aquatic plants and other organisms, in water environments are not permitted. These activities can adversely impact the establishment and permanence of coastal wetland ecosystems and result in project emissions which are not accounted for under the method.

» Activities involving wild catching of marine and freshwater animals, such as recreational line fishing and crabbing, for personal use is permitted and not considered to be "aquaculture activities" under this method.

3.3 Making changes to your project

You can make changes to your project to adjust for changing circumstances, for example, perhaps you want to change the person responsible for running the project.

Changes can be sought through the completion of a Project Variation form, located in the Clean Energy Regulator Client Portal[29]. See Appendix 3 – *Project variations* for a summary of allowed changes and information requirements.

3.4 Monitoring and record keeping requirements

You will need to monitor certain events as you undertake your blue carbon project and keep records of particular information, including:

- Monitoring the establishment of coastal wetland ecosystems during the crediting period of your project, including the year and location in which they establish.
- Monitoring natural disturbances in your project area during the permanence period of your project.
- Keeping records of the type and quantity of fuel used when undertaking project activities in each reporting period.
- Keeping records of the area of land (in hectares) disturbed by excavation activities in each reporting period.
- Information used to inform the preparation or revision of a project operations and maintenance plan.

3.5 Notification requirements

There are a number of events that trigger notification requirements for blue carbon projects, such as a change in the person running the project. When these events occur, you will need to notify us. Appendix 4 – *Notification requirements* lists events that need notification and how long you have to notify us.

Step 4: Reporting and crediting

4.1 Offsets reports and claiming carbon credits

An offsets report is the document (with supporting information) that you provide to us each time you report. It details your project's progress, including the net abatement amount.

You can submit your offsets report and claim for carbon credits through the Clean Energy Regulator Client Portal.[29] Before you can be issued carbon credits, you'll need to set up an Australian National Registry of Emissions Units (ANREU) account[30]. Appendix 5 – *Offsets report requirements* details key information that must be provided in an offsets report.

[29] http://www.cleanenergyregulator.gov.au/OSR/CP

[30] http://www.cleanenergyregulator.gov.au/OSR/ANREU/Opening-an-ANREU-account

4.2 Reporting frequency

You will need to submit an offsets report at the end of each reporting period for your project. You can choose the length for each reporting period which for blue carbon projects could be between one and five years.

Longer reporting periods allow more time for greater amounts of emissions avoidance, vegetation and soil carbon to build up between reporting periods and could decrease the overall costs associated with modelling the carbon change over the course of the project.

The following requirements must also be considered when choosing your reporting frequency:

- Offsets reports cannot be submitted until carbon stock changes in all CEAs have been estimated.
- You must provide an offsets report no later than six months after the end date of each reporting period.
- The first reporting period begins when your crediting period starts (you can postpone this by up to 18 months after registration). The next reporting period begins the day after the previous reporting period ends.

4.3 Defining Carbon Estimation Areas

You will have provided your project area boundaries when you registered your project. However, you now need to identify Carbon Estimation Areas (CEAs) within your larger project area before you prepare each offsets report. CEAs are the areas of your project for which BlueCAM estimates carbon abatement according to the dominant coastal wetland ecosystem type that has established in the area. Where the dominant coastal wetland ecosystem type that has established in a CEA transitions over time to another coastal wetland ecosystem type, you will need to redefine the CEA. Details as to how to define CEAs are included in the blue carbon supplement and the BlueCAM guidelines. The requirements for defining CEAs include:

- All land included in a CEA must be of a single or dominant land type, determined in accordance with the BlueCAM guidelines.
- All land included in a CEA must be located within one BlueCAM region
- All areas of land within the project area where excavation activities have occurred are included within a CEA in the reporting period during which the excavation activities occurred
- Where the CEA contains supratidal forest or mangroves, the vegetation must of be a similar age such that 90% of the vegetation has established itself over a period of 5 years or less
- Any impacted land within the project area must be included in a CEA at the latest in the reporting period during which the land first became impacted
- Non-contiguous areas of parts of the project may be mapped as a single CEA

You are permitted to add new and expand existing CEAs throughout the duration of the project's crediting period as land becomes affected by the introduction of tidal flows and coastal wetland ecosystems begin to establish. Once land is included within a CEA, it must continue to be included in a CEA for the duration of the crediting period unless carbon credits are relinquished.

An example as to how CEAs may be defined and redefined for a blue carbon project over the duration of a 25-year crediting period and how BlueCAM would calculate abatement for each CEA has been included in Appendix 6.

4.4 Calculating carbon abatement

The Blue carbon Accounting Model (BlueCAM) is freely available to enable the calculation of abatement under the method. No sampling is necessary to participate in this method.

Abatement will be calculated for the following:

- Vegetation sequestration
- Soil sequestration
- Emissions avoided
- Emissions from fuel used when carrying out project activities
- Emissions from soil disturbance when carrying out excavation activities

BlueCAM includes regional adjustments and can estimate the baselines for the soil and vegetation organic carbon content, and emissions from soil if applicable for the baseline land type.

The net abatement amount for a project is the summed change in carbon stored within vegetation and soils since the previous offsets report (or relative to the baseline for the first reporting period), and the emissions avoided relative to the baseline, for each CEA. This calculation will also need to account for any increases in emissions resulting from the project (project emissions), including any direct impacts on forests and vegetation due to the introduction of tidal flows, fuel used in the operation of heavy machinery when carrying out project activities and soil disturbance as a result of excavation activities.

The BlueCAM guidelines detail requirements for the use of BlueCAM. BlueCAM may be updated as new data becomes available to ensure the model continues to provide accurate estimates of abatement. Project proponents will need to use the latest version of BlueCAM to calculate their net abatement amount.

Part 4 of the blue carbon method outlines the equations for calculating carbon abatement for blue carbon projects. Note that in Equation 6 the term $E_{r,TR,C}$ refers to $E_{r,TR,CO2,I}$ (the transition emissions released from changes in live vegetation biomass).

4.5 Auditing your project

Your project needs to be audited to align with legislative requirements. The number of audits required over the crediting period will depend on the project size and the forward abatement estimate. Most blue carbon projects will require three audits including one with the first report.

Each audit report is submitted at the same time you apply for carbon credits. We will provide you with an audit schedule when your project is registered. It will tell you which reports need to include audits. For example: "*Audit 2: First project report submitted after 07/01/2026*".

Further information[31] about audit requirements, choosing an auditor, audit types and audit frequency can be found on our website.

We recommend early engagement of an auditor when developing your project as this helps establish audit costs. You can find a list of registered auditors[32] on our website.

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[31] http://www.cleanenergyregulator.gov.au/ERF/Want-to-participate-in-the-Emissions-Reduction-Fund/Step-3-Reporting-and-auditing/Audit-Requirements

[32] http://www.cleanenergyregulator.gov.au/Infohub/Audits/register-of-auditors

Getting started

Ready to start a blue carbon project?

- Learn more about blue carbon projects at our website, where you can find the blue carbon method, the blue carbon method supplement, BlueCAM, the BlueCAM guidelines, the technical overview of BlueCAM and other useful resources, or contact us on 1300 553 542.
- Check for eligible and suitable land which could be informed by hydrological modelling and discussions with NRM groups and relevant State and Territory government organisations
- Begin planning project registration.

Carbon service providers (also known as project developers, aggregators, consultants, or agents) specialise in supporting or running carbon projects, usually for an agreed percentage of earnings. They may be able to help establish and run your project. You can contact a carbon service provider using the Carbon Market Institute's (CMI) Australian Carbon Market Directory[33].

Disclaimer

This document provides general guidance on using the blue carbon method. It does not replace or supersede any legal requirements, address all applicable legal requirements, or recommend any investment. Figures are indicative and are not necessarily applicable to individual circumstances.

ERF projects involve ongoing legal obligations and returns can vary. You are encouraged to carefully consider if a project is right for you and seek independent professional support relating to your unique circumstances.

[33] https://marketplace.carbonmarketinstitute.org/market-directory/

Appendix 1: Soil sequestration, vegetation sequestration and emissions avoided covered by the blue carbon method, organised by land type

Land type	Category	Soil sequestration	Vegetation sequestration	Emissions avoided
Flooded agricultural land, managed wet meadow or pasture (ponded pasture)	Baseline	-	-	Methane Nitrous oxide
Ponds and other constructed water bodies	Baseline	-	-	Methane Nitrous oxide
Saline ponds (including aquaculture not in production)	Baseline	-	-	Nitrous oxide
Sugarcane*	Baseline	-	-	Carbon dioxide (soil C losses) Nitrous oxide
Cropping*	Baseline	-	-	Carbon dioxide (soil C losses) Nitrous oxide
Grazing (managed)*	Baseline	-	-	Carbon dioxide (soil C losses) Nitrous oxide
Other land uses	Baseline	-	-	Nitrous oxide
Tidally restricted and brackish wetlands	Baseline	Yes	-	Methane Nitrous oxide
Forest land	Baseline	-	-	Nitrous oxide
Supratidal forest	Coastal wetland	Yes	Yes	-
Saltmarsh	Coastal wetland	Yes	Yes	-

Sparsely vegetated saltmarsh (salt flats)	Coastal wetland	Yes	Yes	-
Mangroves	Coastal wetland	Yes	Yes	-
Other coastal wetland ecosystem**	Coastal wetland	No	No	-
Seagrass	Coastal wetland	Yes	Yes	-

*As methane emissions from these land types are not part of the mandatory inventory reporting categories under the IPCC, they are not included in Australia's National Greenhouse Accounts, and avoided methane emissions are not eligible abatement for inclusion in ERF blue carbon projects. Nitrous oxide emissions are associated with fertilizer in runoff from agricultural land.

**Because the other coastal wetland ecosystem categorises an unvegetated coastal wetland ecosystem such as a mudflat, there is no sequestration for soil or for biomass included in Australia's National Greenhouse Accounts for this land type. However, project proponents may receive carbon credits for the emissions avoided from a change in baseline land type to mudflats.

Appendix 2: State and Territory regulatory approvals

This appendix provides an overview of the approvals likely to be required for blue carbon projects in each state and territory. Note that this table is not intended to be exhaustive and may not be up to date.

Queensland

Approval	Administering body
Tidal works approvals	Department of State Development, Infrastructure, Local Government and Planning; Dept. Environment and Science; Local Governments
Licence to take or interfere with water	Department of Environment and Science
Permit to remove, destroy or damage a marine plant	Department of Agriculture and Fisheries
Permit to clear protected native plants	Department of Environment and Science
Management of acid sulfate soils	Department of Environment and Science; Department of State Development; Local Governments
Consent for activity on State land	Lands division, Department of Resources

New South Wales

Approval	Administering body
Coastal protection works consent	Department of Planning, Industry and Environment; Local Governments; Regional Planning Panels
Development approval in coastal wetlands and littoral rainforest planning zones	Department of Planning, Industry and Environment; Local Governments
Local Environment Plan, State Environmental Planning Policies, development controls	Department of Planning, Industry and Environment; Local Governments; Regional Planning Panels
Consent for demolition works	Local Governments, Regional Planning Panels
Category 1 Remediation Work Needing Consent (SEPP 55)	Department of Planning, Industry and Environment; Local Governments; Regional Planning Panels; NSW Environment Protection Authority

Development on Crown Land	Department of Planning, Industry and Environment; Local Governments; Regional Planning Panels; Crown Lands
Development consent	Department of Planning, Industry and Environment; Local Governments; Regional Planning Panels; Department of Primary Industries – Fisheries Regional Planning Panels; Department of Primary Industries - Fisheries
Permit to dredge or conduct reclamation work; or permit to cut, remove, damage or destroy marine vegetation on public water land or an aquaculture lease, or on the foreshore of any such land or lease; or **any activity that obstructs or alters tidal flows to marine vegetation in a protected area; or permit to:** **(a) set a net, netting or other material, or** **(b) construct or alter a dam, floodgate, causeway or weir, or** **(c) otherwise create an obstruction, across or within a bay, inlet, river or creek, or across or around a flat**	Department of Fisheries
Development consent and/or permission to harm Aboriginal objects or declared Aboriginal places	Department of Planning, Industry and Environment; Local Governments; Regional Planning Panels; National Parks and Wildlife Service
Demolishing or removing State or Local non-Aboriginal Heritage Items	Department of Planning, Industry and Environment; Local Governments; Regional Planning Panels; NSW Heritage Council
Development consent and/or water use approval, water management work approval or activity approval under Part 3 of Chapter 3 of the Water Management Act 2000	Department of Planning, Industry and Environment; Local Governments; Regional Planning Panels; Water NSW; Natural Resources Access Regulator
Permit to harm marine vegetation (in course of works)	Department of Planning, Industry and Environment; Department of Primary Industries
Approval to clear threatened or endangered flora or fauna	Department of Planning, Industry and Environment – Environment Energy and Science; Local Governments; Regional Planning Panels; Local Land Services

Consent to undertake work in marine park or aquatic reserve	Department of Primary Industries
Development consent for the disturbance of acid sulfate soils	Dept. Planning, Industry and Environment; Local Governments; NSW EPA

Victoria

Approval	Administering body
Consent or permit for works on marine and coastal land	Department of Environment, Land, Water and Planning; Local Governments
Permit for clearing of native vegetation	Department of Environment, Land, Water and Planning; Local Governments
Permit for works that kill, injure, disturb etc protected flora	Department of Environment, Land, Water and Planning
Impacts to Aboriginal cultural heritage	Victorian Aboriginal Heritage Council, Minister for Aboriginal Affairs
Management of coastal acid sulfate soils (and acid sulfate soils)	Department of Sustainability and Environment; Victorian EPA

Western Australia

Approval	Administering body
Permit for construction, demolition or excavation works	Department of Planning, Lands and Heritage: Local Governments
Compliance with the Mining Act 1978 and Petroleum and Geothermal Resources Act 1967	Department of Mines, Industry Regulation and Safety
Consent for activity on relevant tenure	Department of Planning, Lands and Heritage
Authorisation under Conservation and Land Management Act 1984 (WA) to undertake work in conservation reserves managed by DBCA	Department of Biodiversity, Conservation and Attractions
Permit to clear native vegetation	Department of Water and Environmental Regulation

Licence to construct wall at bank of any waters, dredge or reclaim waters	Department of Water and Environmental Regulation
Management of acid sulfate soils	Department of Water and Environmental Regulation; WA EPS

South Australia

Approval	Administering body
Development approval	Planning and Land Use Services; Local Governments
Licence to occupy land – for crown land	Department of Environment and Water (DEW)
Development on land in coastal areas overlay	Planning and Land Use Services; Coastal Protection Board; Local Governments
Consent for killing, destruction, removal, other damage including draining or flooding of land – of native vegetation including seagrass	Native Vegetation Council
Water affecting activity permit	Landscape Boards
Permit to impact on native fauna	National Parks and Wildlife SA
Consent to undertake work in a Marine Park or Aquatic Reserve	Department of Primary Industries and Regions (PIRSA) under the Fisheries Management Act
Consent to undertake work in a protected area (other than a Marine Park), for example National Park, reserve or conservation park	DEW
Native Title and Aboriginal Heritage	Contact relevant Traditional Owner group
Licence to dredge or other 'prescribed activity of environmental significance'	SA EPA
Management of acid sulfate soils	Local Governments; Coastal Protection Board; Dept. for Infrastructure and Transport; SA EPA

Tasmania

Approval	Administering body
Development permit	Department of Primary Industries, Parks, Water and Environment; Tasmanian Planning Commission; Local Governments
Permit to destroy or damage a plant, capture or damage fauna	Department of Primary Industries, Parks, Water and Environment
Management of acid sulfate soils	Department of Primary Industries, Parks, Water and Environment

Appendix 3: Project variations

Further information on varying your project can be found on our making changes to your project webpage[34].

Variation type	Requirements
Add a project area	To add a new project area, you need to: • Identify where the new area is located. • Provide evidence the new area meets the eligibility requirements. • Revise your project's forward abatement estimate. • Nominate the start date of activities.
Vary or remove a project area	Varying or removing a project area has more conditions. You will need to: • Identify what area is being removed. • Revise your project's forward abatement estimate. Removing project areas that have received carbon credits before the end of the project's permanence period will require the return of carbon credits and follows another process. See our website[35] for more information.
Vary project proponent	The project proponent is the person who has the legal right and responsibility for carrying out the project and the right to earn credits. You can add, vary or remove a project proponent. You will need to provide evidence of legal right.
Vary to remove condition	Your project is considered 'conditional' until all consents or approvals are received. You can apply to remove this condition by providing all signed eligible interest-holder consent forms or regulatory approvals through the Project Variation form on the Clean Energy Regulator Client Portal[36]. You will need to provide all eligible interest holder consents and regulatory approvals before the end of the first reporting period.

[34] http://www.cleanenergyregulator.gov.au/ERF/Want-to-participate-in-the-Emissions-Reduction-Fund/Making-changes-to-your-project

[35] http://www.cleanenergyregulator.gov.au/ERF/Want-to-participate-in-the-Emissions-Reduction-Fund/Making-changes-to-your-project#Vary-your-project-area

[36] http://www.cleanenergyregulator.gov.au/OSR/CP

Defer project start date	You can defer your project's nominated start date (which is also the start of your crediting period and first reporting period). The deferred start date cannot be later than 18 months after the date your project is registered (CFI Act s 69 (4-5)). You can only defer the crediting period start date up to and including when you submit your first offsets report, and it can only be deferred once.

Appendix 4: Notification requirements

There are a number of events that trigger notification requirements to the Regulator for blue carbon projects. These are detailed in section 35 of the blue carbon method and section 78 of the CFI Act. Note that this table is not intended to be exhaustive.

Event	Notification triggers	Notification deadline
Project change events	• You conduct a restricted or prohibited activity within the project area. • There has been a change to the acid sulfate soil management plan. • There has been a disturbance to acid sulfate soils that was not identified in the acid sulfate soil management plan. • A mosquito hazard exceeds the hazard envisaged in a current mosquito management plan • There has been a change to the project operations and maintenance plan. • There has been a problem with infrastructure to manage tidal flows as mapped in the tidal inundation map in accordance with the blue carbon supplement.	Within 60 days of you becoming aware of the event.
Disturbance or reversal events	• A natural disturbance occurs that causes significant damage to the coastal wetland ecosystems within a CEA of your project such as a cyclone, or mangrove die-off event. • Coastal wetland ecosystems within a CEA are damaged as a result of another person's actions (that were outside of your control).	Within 60 days of you becoming aware of the event.
Offsets report events	• You identify an error in your offsets report relating to project eligibility or the net abatement amount.	Within 60 days of you becoming aware of the event.

Project proponent events	• The person running the project (the project proponent) changes due to death or other circumstances. • The project proponent is no longer a fit and proper person, due to insolvency or other events.	Within 90 days of you becoming aware of the event.
NRM plans	• Your project becomes inconsistent with a regional NRM plan[37].	Within 90 days of you becoming aware of the event.

[37] For more information on NRM plans see: https://nrmregionsaustralia.com.au/what-is-nrm/

Appendix 5: Key offsets report requirements

This is not an exhaustive list of offsets reporting requirements. Please see the blue carbon method and the blue carbon supplement for further reporting requirements for blue carbon projects. Further information on general reporting requirements can be found on our reporting webpage.

Requirement	Information in offsets report
Evidence of introduction of tidal flow	First offsets report: evidence of tidal flow introduction to land, including date of this beginning to occur. Subsequent offsets reports: only where additional tidal flow introduction activities have occurred during a reporting period – evidence of tidal flow introduction to land, including date of this beginning to occur.
Evidence of establishment of coastal wetland ecosystem	Digital time and date stamped, geolocated digital images for land in each CEA evidencing the coastal wetland ecosystem type, and any changes occurring during the reporting period. First offsets report: information which evidences the land type in the project area at the end of the baseline period
Carbon estimation area/s	Location and boundaries of CEAs for the present reporting period.
BlueCAM inputs	A copy of the inputs to BlueCAM for each CEA.
BlueCAM outputs	A copy of the outputs from BlueCAM for each CEA.
Evidence where planting or seeding was undertaken in reporting period	Where planting or seeding has been undertaken in a CEA during the reporting period, evidence that the planting or seeding meets the requirements of the method for an environmental wetland planting.
Evidence where thinning or minor vegetation removals have been undertaken in the reporting period	Where thinning and minor vegetation removals were undertaken during the reporting period, evidence of what occurred (dates undertaken, photographs, invoices, declarations) and of the amount of biomass affected per CEA.
Evidence of adherence to permanence plan	Evidence that the permanence plan for the project has been complied with for the duration of the reporting period.

Evidence of adherence to acid sulfate soil management plan	Where an acid sulfate soil management plan was required for project registration, evidence that the actions outlined in the plan were undertaken in the reporting period.
Evidence of adherence to mosquito management plan	Where a mosquito management plan was required for project registration, evidence that the actions outlined in the plan were undertaken in the reporting period.
Evidence of adherence to the project operations and maintenance plan	Where project operations and maintenance plan were required for project registration, evidence that the actions outlined in the plan were undertaken in the reporting period.

Appendix 6: Worked example – defining carbon estimation areas in a blue carbon project

Figure 6 (on page 48) provides an illustrative example of how carbon estimation areas (CEAs) are stratified for a hypothetical blue carbon project where tidal flows are introduced to land that was previously used for cropping.

Baseline: Figure 6(a) shows that prior to the blue carbon project, the baseline land type of all land within the project area (CEA 1, shown as the purple polygon within the dotted line) was cropping land. After the blue carbon project is registered the project proponent modifies a tidal gate to allow tidal flows to be introduced to the project area. The project proponent also uses other infrastructure to manage tidal flows in such a way that neighbouring lands are not impacted by the reintroduction of tidal flows.

First reporting period: Figure 6(b) shows that at the end of the first reporting period (year 5), saltmarsh species have started to establish within the project area. The project proponent stratifies the project area into two CEAs according to the dominant ecosystem types that are present. The area of land containing saltmarsh is stratified into CEA 2 (shown as the brown polygon). The cropping land that has been impacted by tidal flows but has not yet transitioned into a coastal wetland ecosystem type is stratified as CEA 1 (shown as the purple polygon with the dotted line). BlueCAM will estimate carbon abatement based on the carbon contained in the soil and vegetation of the saltmarsh, the emissions avoided from transitioning cropping land into saltmarsh and net of the fuel used to implement project activities in the reporting period.

Second reporting period: Figure 6(c) shows that at the end of the second reporting period (year 10), mangrove species have started to establish within the project area and the area of saltmarsh has grown. In some parts of the project area, saltmarsh species and mangrove species are interspersed. The project proponent stratifies the project area into three CEAs according to the dominant ecosystem types present. The area of land dominated by saltmarsh is stratified into CEA 1 (shown as the red polygon with the dotted line). Even though parts of CEA 2 (shown as the yellow polygon with brown lines) contain a combination of saltmarsh and mangrove species, the saltmarsh species account for less than 10% of the vegetation cover in the area. As a result, the dominant ecosystem type in the CEA is mangroves. A new CEA consisting entirely of mangroves is shown as the yellow polygon and labelled as CEA 3. BlueCAM will estimate carbon abatement based on the carbon contained in the soil and vegetation of the saltmarsh and mangroves, the emissions avoided from transitioning previous areas of saltmarsh into mangroves and the remaining cropping land into saltmarsh, and net of the fuel used to implement project activities in the reporting period.

Third reporting period: During the third reporting period, the project experiences a period of low rainfall which leads to increased soil salinity in the project area. As a result, some of the mangroves that had established in the project area experience dieback. Figure 6(d) shows that at the end of the third reporting period (year 15) the area covered by mangroves species has reduced, and some areas which were dominated by mangroves at the end of the previous reporting period are now dominated by saltmarsh species. The project proponent re-stratifies the project area into the following CEAs: the area that is dominated by the pre-existing/older saltmarsh is stratified as CEA 1 (shown as the red polygon with the dotted line), the area that is dominated by the newly established/younger saltmarsh following the diebacks is stratified as CEA 2 (shown as the brown polygon), and the area that is dominated by mangroves is stratified as CEA 3 (shown as the yellow polygon). Although CEA 1 and CEA 2 are both dominated by the same vegetation type, the rate of carbon sequestration will be different in these two areas due to the difference in the age of vegetation. Additionally, since the last reporting period, CEA 2 has transitioned from mangroves, while CEA 1 remained as saltmarsh. Thus, the two ecosystems need to be stratified into

different CEAs. BlueCAM will estimate carbon abatement based on the carbon contained in the soil and vegetation of the saltmarsh and remaining mangroves, any emissions that occurred when above ground mangrove biomass was lost due to dieback, the emissions avoided from transitioning the land into saltmarsh, and net of the fuel used to implement project activities in the reporting period.

Fourth reporting period: During the fourth reporting period, increased levels of rainfall returned soil salinity to average levels. Figure 6(e) shows that at the end of the fourth reporting period (year 20), the existing areas of mangroves remained, and new areas of mangroves have established. The project proponent re-stratifies the project area into four CEAs: the area that is dominated by older saltmarsh is stratified as CEA 1 (shown as the red polygon with the dotted line), the area that is dominated by younger saltmarsh is stratified as CEA 2 (shown as the brown polygon), the area that is dominated by the pre-existing/older mangroves is stratified as CEA 3 (shown as the yellow polygon) and the area that is dominated by the newly established/younger mangroves is stratified as CEA 4 (shown as the green polygons). Different CEAs are established for the mangroves due to the difference in age of the vegetation. Additionally, CEA 4 has transitioned from saltmarsh whereas CEA 3 has remained as mangroves, since the end of last reporting period. BlueCAM will estimate carbon abatement based on the carbon contained in the soil and vegetation of the saltmarsh and the mangroves, the emissions avoided from transitioning areas that were previously dominated by saltmarsh into new areas of mangroves, and net of the fuel used to implement project activities in the reporting period. The CEA representing the younger mangroves includes multiple non-contiguous areas. During the abatement calculation, BlueCAM will account for the carbon sequestration of these non-contiguous areas as a single CEA based on the total area.

Fifth reporting period: Figure 6(f) shows that at the end of the fifth reporting period (year 25) the existing vegetation has remained, and a new area of supratidal forest species has established (shown as the grey polygon). The project proponent re-stratifies the project area into five CEAs: the area that is dominated by older saltmarsh is stratified as CEA 1 (shown as the red polygon with the dotted line), the area that is dominated by younger saltmarsh is stratified as CEA 2 (shown as the brown polygon), the area that is dominated by the older mangroves is stratified as CEA 3 (shown as the yellow polygon), the area that is dominated by the younger mangroves is stratified as CEA 4 (shown as the green polygons), and the area dominated by the supratidal forest species is stratified into CEA 5 (shown as the grey polygon). BlueCAM will estimate carbon abatement based on the carbon contained in the soil and vegetation of the saltmarsh, mangroves and supratidal forest vegetation, the emissions avoided from transitioning part of the area that was previously dominated by the saltmarsh into supratidal forest species, and net of the fuel used to implement project activities in the reporting period.

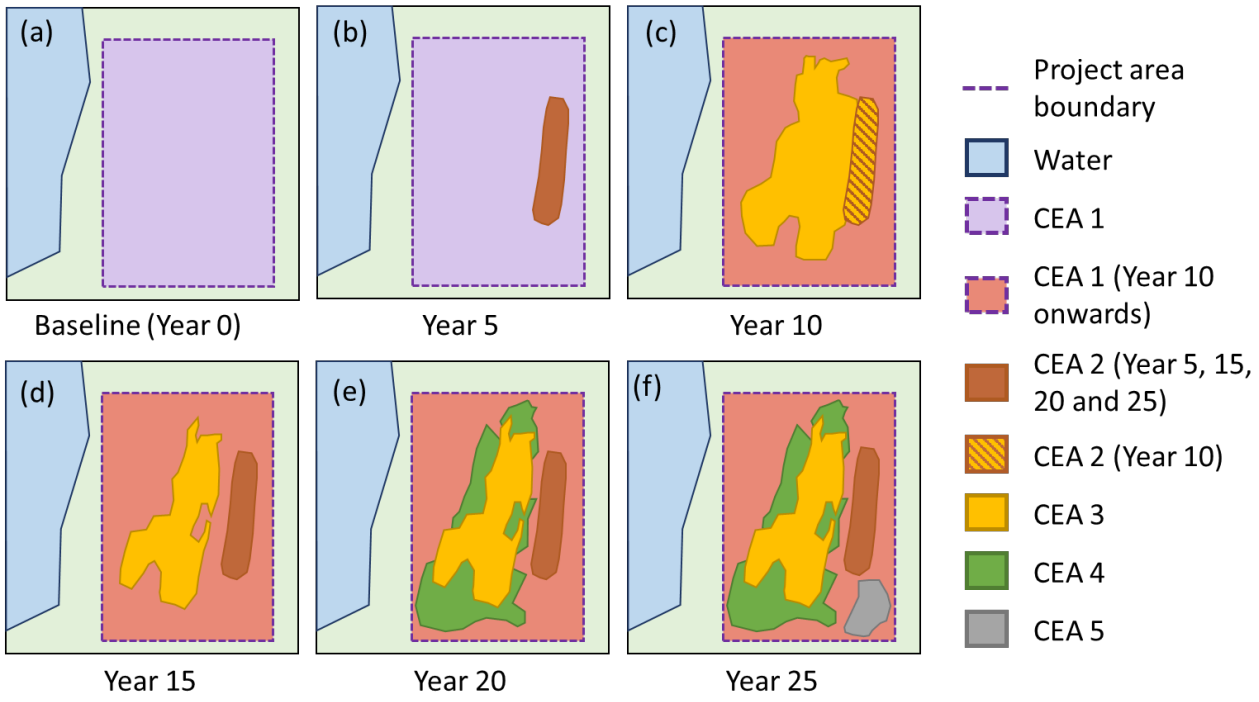

Figure 6: Illustrative example of CEA stratification for a tidal reintroduction project. Note that this figure is for illustrative purposes only and may not accurately reflect the experience of blue carbon projects.

TABLE 4: STRATIFICATION OF THE CEAS AT VARIOUS REPORTING PERIODS. ECOSYSTEMS IN BOLD ARE THE CEAS INCLUDED FOR THAT REPORTING PERIOD. THE VEGETATION AGE AND THE AREA OF EACH CEA IN EACH TIME PERIOD ARE INCLUDED IN PARENTHESES.

CEA	Baseline	First reporting period (Year 5)	Second reporting period (Year 10)	Third reporting period (Year 15)	Fourth reporting period (Year 20)	Fifth reporting period (Year 25)
CEA 1	**Cropping land (100 ha)**	**Cropping land (90 ha)**	**Saltmarsh 5 years old (60 ha)**	**Older saltmarsh 10 years old (*60 ha)**	**Older saltmarsh 15 years old (55 ha)**	**Older saltmarsh 20 years old (50 ha)**
CEA 2	Cropping land	**Saltmarsh 5 years old (10 ha)**	**Mangroves 5 years old (10 ha)**	**Younger saltmarsh 5 years old (10 ha)**	**Younger saltmarsh 10 years old (10 ha)**	**Younger saltmarsh 15 years old (10 ha)**
CEA 3	Cropping land	Cropping land	**Mangroves 5 years old (30 ha)**	**Mangroves 10 years old (20 ha)**	**Older mangroves 15 years old (20 ha)**	**Older mangroves 20 years old (20 ha)**

CEA	Baseline	First reporting period (Year 5)	Second reporting period (Year 10)	Third reporting period (Year 15)	Fourth reporting period (Year 20)	Fifth reporting period (Year 25)
CEA 4	Cropping land	Cropping land	Saltmarsh 5 years old	Older saltmarsh 10 years old	**Younger mangroves 5 years old (15 ha)**	**Younger mangroves 10 years old (15 ha)**
CEA 5	Cropping land	Cropping land	Saltmarsh 5 years old	Older saltmarsh 10 years old	Older saltmarsh 15 years old	**Supratidal forest 5 years old (5 ha)**
Project area	100 ha	100 ha	100 ha	100 ha	100 ha	100 ha